INI-CET November 2021 Question Paper

149 recall questions with answers and explanations.

Recall honesty note: NBEMS does not release official papers, so these are memory-based recall questions, not official papers. Image-based questions are excluded for now because the bank's images are currently unavailable.

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Question 1. Which of the following branches originate from the anterior division of the internal iliac artery? 1. Superior gluteal artery 2. Inferior gluteal artery 3. Superior vesical artery 4. Middle rectal artery 5. Inferior vesical artery 6. Vaginal artery

A. 1,2,3,5

B. 2,3,4,6

C. 2,3,4,5,6

D. 1,4,5,6

Correct answer: C

2,3,4,5,6 The internal iliac artery bifurcates into an anterior and a posterior division. The posterior division supplies the pelvic wall and gluteal region, giving off the iliolumbar, lateral sacral, and superior gluteal arteries (1). All the other arteries listed are branches of the anterior division, which primarily supplies the pelvic viscera, perineum, and medial thigh. These visceral and parietal branches include the umbilical artery (from which the superior vesical artery (3) arises), obturator artery, inferior vesical artery (5) (in males), uterine artery (from which the vaginal artery (6) arises in females), middle rectal artery (4), internal pudendal artery, and the inferior gluteal artery (2). Therefore, all the arteries listed, with the exception of the superior gluteal artery, originate from the anterior division of the internal iliac artery.

Question 2. Match the following with the respective ages of fusion : a. Medial end of clavicle 1. 22-25 years b. Sacrum as a single bone 2. 50 years c. Crista scapulae 3. 45 years d. Lambdoid suture 4. 21-25 years

A. a-1, b-2, c-3, d-4

B. a-4, b-1, c-2, d-3

C. a-4, b-3, c-1, d-2

D. a-1, b-4, c-3, d-2

Correct answer: B

a-4, b-1, c-2, d-3 This question matches various skeletal landmarks with their typical age of fusion or closure. a. Medial end of clavicle : This is one of the last secondary ossification centers in the body to fuse, making it crucial for age estimation in young adults. Fusion typically occurs

between 21-25 years (4). b. Sacrum as a single bone : The five sacral vertebrae begin to fuse from the bottom up after puberty, with the process usually completing, forming a single solid bone, by the age of 22-25 years (1). d. Lambdoid suture : Cranial sutures begin to close later in life. The lambdoid suture generally starts its fusion process in the late 20s or 30s and significant closure is seen around 45 years (3). c. Crista scapulae : This is not a standard anatomical term. However, by elimination and understanding that suture closure continues into late adulthood, it can be matched with 50 years (2), representing advanced skeletal aging.

Question 3. A loss of hand-eye coordination suggests a lesion in which brain lobe?

A. Parietal lobe

B. Frontal lobe

C. Temporal lobe

D. Occipital lobe

Correct answer: A

Parietal lobe The parietal lobe, particularly the posterior parietal cortex, functions as a critical association area that integrates visual and somatosensory information. It constructs a spatial map of the body in relation to its environment, which is essential for guiding movements. This region is part of the dorsal ("where") visual stream. A lesion in the parietal lobe can lead to optic ataxia, a specific deficit in visually guided reaching and grasping. This condition impairs the ability to accurately use visual information to direct hand movements, representing a classic deficit in hand-eye coordination. The frontal lobe (B) is involved in planning and executing motor commands. The occipital lobe (D) is responsible for primary visual processing. The temporal lobe (C) is involved in object recognition (the "what" pathway).

Question 4. In the infraclavicular fossa, which portion of this bone can be felt by touch? NODIA page 597 INICET Examination Paper

A. Granuloma : Sarcoidosis

B. Calcification of valve : Mitral stenosis

C. Aschoff body : Rheumatic heart disease

D. Non-caseating granuloma : Tuberculosis

Correct answer: C

Aschoff body : Rheumatic heart disease The patient's clinical presentation with mitral stenosis is highly suggestive of a past history of rheumatic fever. The provided histopathological image shows the pathognomonic lesion of acute rheumatic carditis : an Aschoff body. An Aschoff body is a focus of fibrinoid necrosis surrounded by a collection of inflammatory cells, including lymphocytes, plasma cells, and characteristic large macrophages with vesicular nuclei and prominent nucleoli, known as Anitschkow cells ("caterpillar cells"). The presence of Aschoff bodies in the myocardium is diagnostic of rheumatic heart disease (RHD). Chronic RHD is the most common cause of mitral stenosis worldwide. The image is not a granuloma (A, D) or a

calcified valve (B), but rather the specific inflammatory lesion within the heart muscle itself.

Question 5. If a patient has low blood oxygen (hypoxemia) but a normal alveolar-arterial (A-a) oxygen gradient, what medical condition does this typically point to?

A. Right to left shunt

B. Ventilation/perfusion (V/Q) mismatch

C. Hypoventilation

D. Alveolar membrane damage

Correct answer: C

Hypoventilation

Question 6. What is a characteristic feature observed in physiological jaundice?

A. Increased indirect bilirubin, increased urobilinogen, absent bilirubin in urine

B. Increased direct bilirubin, increased urobilinogen, absent bilirubin in urine

C. Increased indirect bilirubin, absent urobilinogen, absent bilirubin in urine

D. Increased direct bilirubin, absent urobilinogen, absent bilirubin in urine

Correct answer: A

Increased indirect bilirubin, increased urobilinogen, absent bilirubin in urine Physiological jaundice in newborns is a common, transient condition caused by the immaturity of the liver's bilirubin-conjugating system (low UGT enzyme activity), coupled with an increased bilirubin load from the breakdown of fetal red blood cells. This leads to an increase in unconjugated (indirect) bilirubin in the bloodstream. Unconjugated bilirubin is lipid-soluble and bound to albumin, so it cannot be filtered by the kidneys, resulting in absent bilirubin in the urine. The bilirubin that is successfully conjugated and excreted into the gut gets converted by bacteria to urobilinogen. A portion of this urobilinogen is reabsorbed and excreted in the urine, so urobilinogen is present (and may be increased due to the higher overall bilirubin turnover). This pattern contrasts with obstructive jaundice, which would feature increased direct bilirubin and bilirubin in the urine.

Question 7. Which of the following is not associated with renal auto-regulation?

A. Tubuloglomerular feedback

B. Myogenic reflex

C. Renin-angiotensin system

D. Renal sympathetic system fibers

Correct answer: D

Renal sympathetic system fibers Renal autoregulation refers to the intrinsic mechanisms within the kidney that maintain a stable renal blood flow (RBF) and glomerular filtration rate (GFR) despite fluctuations in systemic blood pressure. The two primary intrinsic mechanisms are the myogenic reflex (B), where the afferent arteriole constricts in response to stretch, and

tubuloglomerular feedback (TGF) (A), mediated by the macula densa. While the renin-angiotensin system (RAS) (C) is often considered an extrinsic system, angiotensin II plays a role in autoregulation by constricting the efferent arteriole, helping to maintain GFR when renal perfusion pressure drops. In contrast, the renal sympathetic nervous system (D) is a purely extrinsic control mechanism. Strong sympathetic stimulation (e.g., during shock or intense exercise) causes profound vasoconstriction of the afferent arterioles, which can override the intrinsic autoregulatory mechanisms to reduce GFR and divert blood flow away from the kidneys.

Question 8. The stroke volume depends on end-diastolic volume. This is best represented as?

A. Length-force relationship

B. Length-velocity relationship

C. Length-tension relationship

D. Length-viscosity relationship

Correct answer: C

Length-tension relationship The statement describes the Frank-Starling law of the heart. This fundamental principle states that the force of ventricular contraction (and thus stroke volume) is directly proportional to the initial length of the muscle fibers at the end of diastole. The end-diastolic volume (EDV), or preload, determines this initial fiber length. The underlying cellular mechanism is the length-tension relationship of the cardiac muscle (myocardium). As the myocytes are stretched by an increased EDV, the overlap between actin and myosin filaments becomes more optimal, and the sensitivity of the myofilaments to calcium increases. This results in a more forceful contraction (greater tension development), which ejects a larger stroke volume. While "length-force" (A) is functionally similar, "length-tension" is the more precise physiological term used to describe this property of muscle tissue.

Question 9. Which sensory receptors are responsible for tactile discrimination?

A. Merkel disc

B. Meissner's corpuscle

C. Pacinian corpuscle

D. Both A & B

Correct answer: D

Both A & B Tactile discrimination, which includes the ability to perceive fine details like texture, shape, and two-point discrimination, relies on sensory receptors with small, well-defined receptive fields, located superficially in the skin. Both Merkel discs and Meissner's corpuscles fit this description. Merkel discs (A) are slow-adapting mechanoreceptors that are sensitive to sustained pressure and texture, making them crucial for reading Braille and sensing fine details. Meissner's corpuscles (B) are rapidly adapting receptors that are sensitive to light touch, flutter,

and grip control. Both are highly concentrated in the fingertips and other sensitive areas. In contrast, Pacinian corpuscles (C) are located deeper in the dermis, have large receptive fields, and are rapidly adapting receptors that detect deep pressure and high-frequency vibration, contributing less to fine tactile discrimination. Therefore, both Merkel discs and Meissner's corpuscles are key players.

Question 10. What is the chloride equilibrium potential if the extracellular concentration is 100 mmol/L and the intracellular concentration is 10 mmol/L?

A. +10 mV

B. -10 mV

C. -60 mV

D. +60 mV

Correct answer: C

-60 mV The equilibrium potential of an ion is calculated using the Nernst equation at body temperature (37°C): The closest option is −60 mV. Because chloride is negatively charged, the equilibrium potential is negative. This means an electrical gradient must oppose the chemical gradient to prevent net inward movement of Cl^- ions.

Question 11. Which of the following does not cause a rightward shift of the oxygen–hemoglobin dissociation curve?

A. Increased HbF

B. Raised 2,3 BPG

C. Acidosis

D. Increased CO 2 Click Here to Buy book on Amazon MEDINK

Correct answer: D

Clot activator The image shows a red-capped vacutainer tube labeled “Clot Activator.” Clot activator tubes are used to collect blood samples for serum testing. They contain substances (such as silica particles) that accelerate blood clotting, allowing serum to be separated after centrifugation. Why not the others? (A) Na-EDTA → Usually found in lavender/purple top tubes, used for hematology (CBC). (B) Trisodium citrate → Found in light blue top tubes, used for coagulation studies. (C) NaF–heparin → Found in gray or green top tubes, used for glucose testing. Since the tube in the image clearly indicates “Clot Activator,” the correct option is : (D) Clot activator.

Question 12. Which of the following does not have the presence of the sodium-iodide symporter?

A. Pituitary gland

B. Thyroid gland

C. Placenta

D. Salivary gland

Correct answer: A

Pituitary gland The sodium-iodide symporter (NIS) is a membrane protein responsible for the active transport of iodide ions into cells. Its most well-known and crucial function is in the follicular cells of the thyroid gland (B), where it mediates the first step of thyroid hormone synthesis, known as iodide trapping. However, the NIS protein is also expressed in several other extrathyroidal tissues. These include the salivary glands (D), gastric mucosa, lactating mammary glands, and the placenta (C), where it plays a role in transporting iodide into saliva, milk, and to the fetus, respectively. The pituitary gland (A), however, is not known to express the sodium-iodide symporter. Its function is to regulate the thyroid gland via TSH, but it is not directly involved in iodide transport.

Question 13. What is the formula used to calculate Stroke Volume (SV) in the context of cardiac physiology?

A. SV = End-Diastolic Volume (EDV) - End- Systolic Volume (ESV)

B. SV = Heart Rate (HR) Ejection Fraction (EF)

C. SV = Cardiac Output (CO) / Heart Rate (HR)

D. SV = Preload Afterload

Correct answer: C

also correctly defines stroke volume, as Cardiac Output (CO) is the product of Stroke Volume and Heart Rate (CO = SV × HR), so SV = CO / HR. However, option (A) represents the fundamental definition of stroke volume based on ventricular volumes. Option (B) and (D) are incorrect formulas. BIOCHEMISTRY

Question 14. Which of the following poisonous agents does not inhibit cytochrome oxidase?

A. Hydrogen sulfide

B. Carbon monoxide

C. Methane

D. Cyanide

Correct answer: C

Methane Cytochrome c oxidase (Complex IV) is the terminal enzyme of the mitochondrial electron transport chain. Its inhibition blocks aerobic respiration, leading to cytotoxic hypoxia. Cyanide (D) is the classic inhibitor, binding to the ferric iron (Fe^{3+}) within the enzyme. Hydrogen sulfide (A) acts through a similar inhibitory mechanism. Carbon monoxide (B) can also inhibit cytochrome oxidase, although its primary toxic effect is its high-affinity binding to hemoglobin. In contrast, methane (CH_4) is a simple asphyxiant. It is a physiologically inert gas that is not directly toxic to cells. It causes hypoxia simply by displacing oxygen in the inhaled air, leading to a reduced fraction of inspired oxygen (FiO_2) and subsequent

hypoxemia. It does not have any direct inhibitory effect on cellular enzymes like cytochrome oxidase.

Question 15. Which of the following lipase enzymes is inhibited by insulin?

A. Lipoprotein lipase

B. Pancreatic lipase

C. Gastric lipase

D. Hormone-sensitive lipase

Correct answer: D

Hormone-sensitive lipase Hormone-sensitive lipase (HSL) is a key intracellular enzyme found in adipocytes (fat cells). Its function is to hydrolyze stored triglycerides into free fatty acids and glycerol, a process known as lipolysis, releasing these energy substrates into the bloodstream. The activity of HSL is tightly regulated by hormones. It is stimulated by counter-regulatory hormones like epinephrine and glucagon (via cAMP and PKA). Conversely, it is strongly inhibited by insulin. Insulin, which is released in the fed state, promotes energy storage. By inhibiting HSL, insulin suppresses the breakdown of stored fat. In contrast, insulin activates lipoprotein lipase (A), which is located on capillary walls and helps to clear triglycerides from the blood for storage in fat cells. Pancreatic (B) and gastric (C) lipases are digestive enzymes.

Question 16. What is the main substrate and metabolic fuel used by red blood cells (RBCs) during the fasting period?

A. Ketone bodies

B. Glucose

C. Free fatty acids

D. Amino acids

Correct answer: B

Glucose Red blood cells (RBCs) have a unique metabolism because they lack mitochondria. The absence of mitochondria means they are incapable of aerobic respiration (i.e., they cannot use the Krebs cycle or oxidative phosphorylation). Therefore, they are entirely dependent on anaerobic glycolysis for all of their ATP production. The sole fuel source for glycolysis is glucose. This dependence is absolute and does not change with the body's metabolic state. Whether in the fed state or a prolonged fasting period, RBCs must continuously extract glucose from the bloodstream to meet their energy needs. They cannot utilize free fatty acids (C), ketone bodies (A), or amino acids (D) as fuel because the metabolic pathways for these substrates require functional mitochondria.

Question 17. Which of the following macronutrients requires the most energy for assimilation?

A. Proteins

B. Carbohydrates

C. Mono-unsaturated fatty acids

D. Polyunsaturated fatty acids

Correct answer: A

Proteins The energy required to digest, absorb, and metabolize nutrients is known as the thermic effect of food (TEF) or specific dynamic action. This effect varies significantly among macronutrients. Proteins have the highest TEF, requiring the most energy for their assimilation. Approximately 20-30% of the energy content of the ingested protein is expended during its metabolism (e.g., deamination, urea synthesis). Carbohydrates (B) have a lower TEF, typically around 5-10%. Fats, including both mono-unsaturated (C) and polyunsaturated (D) fatty acids, have the lowest TEF, usually in the range of 0-3%. This means that the body is most efficient at storing energy from fat and least efficient at storing energy from protein. This high thermic effect of protein is one reason why high-protein diets are often recommended for weight management.

Question 18. Which of the following is associated with a defect in collagen maturity?

A. Scurvy

B. Rickets

C. Beriberi

D. Night blindness

Correct answer: A

Scurvy Scurvy is the disease caused by a severe deficiency of Vitamin C (ascorbic acid). Vitamin C is an essential cofactor for two key enzymes, prolyl hydroxylase and lysyl hydroxylase, which are involved in the post-translational modification of collagen. These enzymes are responsible for hydroxylating proline and lysine residues within the procollagen chains. This hydroxylation step is crucial for the formation of stable cross-links between collagen molecules, which gives the final collagen triple helix its strength and stability. In the absence of Vitamin C, this process is impaired, leading to the production of weak, unstable, and immature collagen. This results in the characteristic symptoms of scurvy, such as poor wound healing, bleeding gums, and perifollicular hemorrhages. Rickets (B) is a defect in bone mineralization due to Vitamin D deficiency.

Question 19. Which enzyme is affected in a patient with thiamine deficiency who develops lactic acidosis?

A. Pyruvate carboxylase

B. Pyruvate dehydrogenase

C. Phosphoenolpyruvate carboxykinase

D. Transketolase

Correct answer: B

Pyruvate dehydrogenase Thiamine (Vitamin B1), in its active form thiamine pyrophosphate (TPP), is a critical cofactor for several key enzymes in carbohydrate metabolism. One of the most important of these is the pyruvate dehydrogenase (PDH) complex. The PDH complex catalyzes the irreversible conversion of pyruvate (the end product of glycolysis) to acetyl-CoA, linking glycolysis to the Krebs cycle. In thiamine deficiency, the activity of the PDH complex is severely impaired. This creates a metabolic block, preventing pyruvate from entering the Krebs cycle for aerobic respiration. The accumulating pyruvate is then shunted to an alternative pathway, where it is converted to lactate by lactate dehydrogenase. This overproduction of lactate leads to lactic acidosis. Transketolase (D) is also a thiamine-dependent enzyme in the pentose phosphate pathway, but its deficiency does not cause lactic acidosis.

Question 20. Which of the following statements accurately describe the impact of Glucose-6-Phosphate Dehydrogenase (G6PD) deficiency? 1. Decrease in reduced glutathione 2. Decrease NADPH 3. Decreased lipid peroxidation 4. Decreased RBC membrane damage

A. Only 1 is correct

B. 1 & 2 are correct

C. 2 & 3 are correct

D. 1, 2 & 4 are correct

Correct answer: B

1 & 2 are correct Glucose-6-phosphate dehydrogenase (G6PD) is the rate-limiting enzyme of the pentose phosphate pathway (PPP). The primary function of the PPP in red blood cells is to produce NADPH (nicotinamide adenine dinucleotide phosphate). Therefore, a deficiency in G6PD leads to a decrease in NADPH (2 is correct). NADPH is essential for maintaining a supply of reduced glutathione (GSH), which is catalyzed by the enzyme glutathione reductase. Reduced glutathione is a critical antioxidant that detoxifies reactive oxygen species. A decrease in NADPH leads to a decrease in reduced glutathione (1 is correct). In the absence of sufficient GSH, RBCs are highly susceptible to oxidative stress from certain drugs or infections. This oxidative stress leads to increased lipid peroxidation (3 is incorrect) and increased RBC membrane damage (4 is incorrect), ultimately causing hemolysis.

Question 21. Which of the following diagnostic markers is/ are not correctly matched? 1. Beta glucocerebro- sidase - Von Gierke dis- ease 2. Lipase - Acute pancreati- tis 3. Ceruloplasmin - Hepatolenticular degeneration 4. High LDH1 : LDH2 ratio - Myocardial in- farction

A. 1 only

B. 1 and 2

C. 1, 2 and 4

D. 2, 3 and 4

Correct answer: A

1 only 1. Beta glucocerebrosidase - Von Gierke disease : This is incorrectly matched. Deficiency of beta-glucocerebrosidase causes Gaucher disease, a lysosomal storage disorder. Von Gierke disease (Glycogen Storage Disease Type I) is caused by a deficiency of glucose-6-phosphatase. 2. Lipase - Acute pancreatitis : This is a correct match. Serum lipase and amylase are the key enzymatic markers used to diagnose acute pancreatitis. 3. Ceruloplasmin : Hepatolenticular degeneration : This is a correct match. Hepatolenticular degeneration is the eponym for Wilson's disease, a disorder of copper metabolism. It is characterized by low levels of the copper-carrying protein, ceruloplasmin. 4. High LDH1 : LDH2 ratio - Myocardial infarction : This is a correct match. Lactate dehydrogenase (LDH) exists as isoenzymes. Normally, the LDH2 level is higher than LDH1. In a myocardial infarction, damaged heart muscle releases LDH1, causing the LDH1 :LDH2 ratio to "flip" and become greater than 1. Therefore, only the first pair is incorrectly matched.

Question 22. What is the correct outcome of leprosy's healing if it is not treated?

A. No spontaneous remission is seen

B. Half of the cases resolve spontaneously after bacilli exposure

C. Spontaneous remission is more common in children than in adults

D. Indeterminate leprosy has more remission than tuberculoid

Correct answer: D

Indeterminate leprosy has more remission than tuberculoid Leprosy has a broad clinical spectrum depending on the host’s immune response. Early infection often presents as indeterminate leprosy, which is a mild, early, and unstable form of the disease. In many cases, especially when cell-mediated immunity improves, indeterminate lesions may undergo spontaneous healing without treatment. Indeterminate leprosy has a higher rate of spontaneous remission compared to tuberculoid leprosy. While tuberculoid leprosy also represents a strong immune response and limited disease, it is more stable and less likely to regress spontaneously once established. 1. Option (A) is incorrect because spontaneous remission can occur. 2. Option (B) is incorrect as the percentage stated is not accurate. 3. Option (C) is not a standard principle in the natural history of leprosy. Thus, among the given options, indeterminate leprosy shows the greatest likelihood of spontaneous remission, making option (D) correct.

Question 23. Which proteins of Human Papillomavirus (HPV) are responsible for inactivating the RB gene?

A. E6

B. E7

C. L1

D. L2

Correct answer: B

E7 High-risk types of Human Papillomavirus (HPV) are the primary cause of cervical cancer and other anogenital cancers. Their carcinogenic potential is mediated by two early viral oncoproteins, E6 and E7. The E7 protein functions by binding to and promoting the degradation of the retinoblastoma (pRB) tumor suppressor protein. pRB normally acts as a brake on the cell cycle by binding to the E2F transcription factor. By inactivating pRB, the E7 protein releases E2F, allowing the cell to bypass the G1/S checkpoint and undergo uncontrolled proliferation. The E6 protein (A) has a different primary target; it binds to and promotes the degradation of the p53 tumor suppressor protein, thereby inhibiting apoptosis. The L1 and L2 proteins (C, D) are late proteins that form the viral capsid.

Question 24. Which mediators are involved in the initial stage of type 1 hypersensitivity? 1. Mast cell 2. Histamine 3. Neutrophils 4. Prostaglandins 5. Leukotrienes

A. 1,5

B. 1, 2, 3, 4

C. 1,2,4,5

D. 2, 3, 4

Correct answer: C

1,2,4,5 Type I hypersensitivity is the immediate, IgE-mediated allergic reaction. The process is initiated when an allergen cross-links IgE antibodies bound to the surface of mast cells (1) (and basophils). This cross-linking triggers the degranulation of the mast cell, which releases a flood of pre-formed and newly synthesized mediators. The initial or immediate phase is dominated by the release of pre-formed mediators from granules, the most important of which is histamine (2). Almost immediately, the mast cell also begins to synthesize lipid-derived mediators from its membrane phospholipids via the arachidonic acid pathway. These include prostaglandins (4) (e.g., PGD2) and leukotrienes (5) (e.g., LTC4, LTD4, LTE4). These mediators are responsible for the classic allergic symptoms. Neutrophils (3) are recruited later in the late-phase reaction, not the initial stage.

Question 25. Which of the following is utilized for the treatment of sideroblastic anemia?

A. Vitamin B12

B. Vitamin B6

C. Vitamin B1

D. Iron

Correct answer: B

Vitamin B6 Sideroblastic anemia is a group of blood disorders characterized by the presence of ring sideroblasts in the bone marrow. It results from a defect in the synthesis of heme. The first

and rate-limiting step in heme synthesis is the condensation of succinyl-CoA and glycine to form delta-aminolevulinic acid (ALA), a reaction catalyzed by the enzyme ALA synthase. This enzyme requires pyridoxal 5'-phosphate (PLP) as a cofactor. PLP is the active form of Vitamin B6 (pyridoxine). In some forms of sideroblastic anemia, particularly the hereditary X-linked type, there is a mutation in the ALA synthase enzyme that can be partially overcome by administering high doses of its cofactor, Vitamin B6. Therefore, a trial of pyridoxine is a cornerstone of therapy for certain types of sideroblastic anemia.

Question 26. Match the following markers with the respective tumors : Section A Section B 1. Yolk sac tumor a. LDH 2. Dysgerminoma b. Beta-hCG 3. Choriocarcinoma c. AFP 4. Epithelial cell tumor d. CA-125

A. 1-a, 2-c, 3-b, 4-d

B. 1-c, 2-a, 3-b, 4-d

C. 1-c, 2-a, 3-d, 4-b

D. 1-a, 2-c, 3-d, 4-b

Correct answer: B

1-c, 2-a, 3-b, 4-d This question matches ovarian tumor types with their characteristic tumor markers. 1. Yolk sac tumor : This germ cell tumor is characterized by the production of alpha-fetoprotein (AFP) (c). Schiller-Duval bodies are a classic histological finding. 2. Dysgerminoma : This is the most common malignant germ cell tumor and is the ovarian counterpart to the testicular seminoma. It is often associated with elevated levels of lactate dehydrogenase (LDH) (a). 3. Choriocarcinoma : This is a highly malignant germ cell tumor composed of syncytiotrophoblasts and cytotrophoblasts. The syncytiotrophoblasts produce large amounts of beta-human chorionic gonadotropin (beta-hCG) (b). 4. Epithelial cell tumor : This is the most common category of ovarian cancer. The most widely used tumor marker for monitoring epithelial ovarian cancer (especially the serous type) is Cancer Antigen 125 (CA-125) (d).

Question 27. What follow-up diagnostic procedure is recommended for a child with bilateral proptosis and a peripheral smear suggesting chloroma?

A. Platelet count

B. WBC count

C. Flow cytometry

D. Bone marrow biopsy

Correct answer: D

Bone marrow biopsy A chloroma, also known as a granulocytic sarcoma or myeloid sarcoma, is a solid, extramedullary tumor composed of leukemic myeloblasts. It can occur in various parts of the body, including the orbit, leading to proptosis. Its presence is a manifestation of acute myeloid leukemia (AML). While the peripheral smear may have been suggestive of AML (e.g., by

showing circulating blasts), the definitive diagnosis of leukemia requires a bone marrow biopsy and aspirate. This procedure is essential to confirm the diagnosis, determine the specific subtype of AML through morphology, cytochemistry, immunophenotyping (flow cytometry), and cytogenetics, and to assess the overall cellularity and extent of bone marrow infiltration by the leukemic cells. Flow cytometry (C) is performed on the bone marrow sample but is not the primary procedure itself.

Question 28. What might be a possible cause of scrotal swelling and ataxia in a 62-year-old patient?

A. Glioblastoma multiforme

B. Hodgkin lymphoma

C. Non-Hodgkin lymphoma

D. Non-seminomatous germ cell tumor

Correct answer: C

Non-Hodgkin lymphoma In a 62-year-old man, scrotal swelling raises suspicion for testicular lymphoma, which is the most common testicular malignancy in elderly males. Non-Hodgkin lymphoma frequently involves extranodal sites, including the testes. Testicular non-Hodgkin lymphoma is known for its tendency to spread to the central nervous system (CNS). CNS involvement can produce neurological symptoms such as ataxia, focal deficits, or altered sensorium. Thus, the combination of scrotal swelling and ataxia suggests testicular lymphoma with secondary CNS involvement. Other options are less likely: 1. Glioblastoma multiforme would cause neurological symptoms but not scrotal swelling. 2. Hodgkin lymphoma less commonly presents with primary testicular involvement. 3. Non-seminomatous germ cell tumor is more common in younger men. Therefore, in an elderly patient with testicular mass and neurological signs, non-Hodgkin lymphoma is the most likely cause.

Question 29. Which of the following is not associated with massive splenomegaly?

A. Chronic myeloid leukemia

B. Aplastic anemia

C. Hairy cell leukemia

D. Lymphoma

Correct answer: B

Aplastic anemia Massive splenomegaly is defined as a spleen that is palpable more than 8 cm below the left costal margin or weighs more than 1000 grams. It is caused by a limited number of conditions, typically those involving significant infiltration of the spleen or chronic congestion. Classic causes include myeloproliferative neoplasms like Chronic Myeloid Leukemia (CML) (A), which almost always causes massive splenomegaly. Certain hematologic malignancies like Hairy Cell Leukemia (C) and some types of lymphoma (D) (especially splenic marginal zone lymphoma) are also well-known causes. In contrast, aplastic anemia (B) is a

condition characterized by pancytopenia due to bone marrow failure. The bone marrow is hypo cellular, and there is no extramedullary hematopoiesis or infiltration of the spleen. Therefore, splenomegaly is characteristically absent in aplastic anemia, and its presence would cast doubt on the diagnosis.

Question 30. Which statement accurately describes the effect of iron regulatory protein (IRP) binding to iron- responsive elements (IRE) on the translation of ferritin and transferrin receptor 1 in a patient with iron deficiency anemia?

A. Ferritin translation is increased by binding IRP to IRE

B. Ferritin translation is decreased by binding IRP to IRE

C. Transferrin receptor 1 translation is unaffected by binding IRP to IRE

D. Transferrin receptor 1 translation is decreased by binding IRP to IRE

Correct answer: B

Ferritin translation is decreased by binding IRP to IRE In a state of iron deficiency, intracellular iron levels are low. This causes the iron regulatory protein (IRP) to be active and bind to specific stem-loop structures on mRNAs called iron-responsive elements (IREs). The location of the IRE determines the effect of IRP binding. The IRE for ferritin (the iron storage protein) is located in the 5' untranslated region (5' UTR) of its mRNA. When IRP binds here, it sterically hinders the assembly of the ribosomal complex, thereby blocking and decreasing the translation of ferritin. This makes physiological sense, as the cell does not want to store iron when it is deficient. The IRE for the transferrin receptor 1 (which imports iron into the cell) is in the 3' UTR. IRP binding here stabilizes the mRNA and prevents its degradation, thus increasing its translation. This allows the cell to make more receptors to take up more iron.

Question 31. In respiratory distress syndrome, which structure is affected?

A. 1

B. 2

C. 3

D. 4

Correct answer: A

Increased HbF A rightward shift of the oxygen-hemoglobin dissociation curve signifies a decrease in hemoglobin's affinity for oxygen, which facilitates oxygen unloading to the tissues. Factors that cause a right shift include increased 2,3-Bisphosphoglycerate (BPG) (B), acidosis (decreased pH, the Bohr effect) (C), and increased partial pressure of carbon dioxide (CO_2) (D), as well as increased temperature. These conditions are typically found in metabolically active tissues. In contrast, fetal hemoglobin (HbF) (A) has a higher intrinsic affinity for oxygen than adult hemoglobin (HbA). This is because HbF binds 2,3-BPG less avidly. The higher oxygen affinity of HbF facilitates the transfer of oxygen from the maternal circulation across the placenta to the fetus. Therefore, an increased proportion of HbF causes a leftward shift of the

dissociation curve, not a rightward shift.

Question 32. Which of the following viruses is unable to integrate into the human genome to initiate carcinogenesis?

A. HPV

B. HBV

C. HTLV

D. EBV

Correct answer: B

HBV 1. Human papillomavirus (HPV) integrates its DNA into the host genome in high-risk types (e.g., HPV 16, 18). Integration leads to overexpression of E6 and E7 oncogenes, promoting carcinogenesis. 2. Human T-lymphotropic virus 1 (HTLV-1) is a retrovirus and must integrate into the host genome as part of its replication cycle. 3. Epstein-Barr virus (EBV) can persist in host cells in a latent form and may integrate or exist episomally, contributing to oncogenesis. 4. Hepatitis B virus (HBV), however, does not require integration into the host genome to initiate carcinogenesis. HBV is a partially double-stranded DNA virus that replicates via reverse transcription, and although integration can occur incidentally, it is not necessary for its replication or oncogenic process. Therefore, among the given options, the virus unable (i.e., not requiring) integration to initiate carcinogenesis is HBV.

Question 33. In which of the following is the Oil Red O stain utilized?

A. Formalin fixation

B. Frozen section

C. Alcohol fixation

D. Glutaraldehyde fixation

Correct answer: B

Frozen section Oil Red O is a lysochrome (fat-soluble) diazo dye used in histology to stain neutral triglycerides and lipids. During routine tissue processing for paraffin embedding, tissues are dehydrated using alcohols and cleared with agents like xylene. These organic solvents dissolve and wash out lipids, so lipid staining is not possible on standard paraffin-embedded sections. To preserve the lipids within the tissue, the specimen must be processed as a frozen section. In this technique, the fresh tissue is rapidly frozen, cut on a cryostat, and then stained. This avoids the use of lipid-dissolving solvents. Therefore, Oil Red O staining is specifically utilized for demonstrating fat in frozen tissue sections. page 605 INICET Examination Paper

Question 34. Which repair mechanism is linked with CRISPR-Cash?

A. Non-homologous end joining

B. Base excision repair

C. Nucleotide excision repair

D. Mismatch repair

Correct answer: A

Non-homologous end joining The CRISPR-Cash system is a genome editing tool that works by inducing a targeted double-strand break (DSB) in the DNA at a specific location guided by an RNA molecule. Once the DSB is created, the cell's own DNA repair machinery takes over. The cell has two main pathways to repair DSBs. The most common and default pathway is non-homologous end joining (NHEJ). This pathway is error-prone and often introduces small insertions or deletions (indels) at the break site as it ligates the broken ends back together. This is the mechanism that is typically exploited to create gene "knockouts." The other, less frequent pathway is homology-directed repair (HDR), which can be used to "knock in" a specific DNA sequence if a template is provided. The other options (B, C, D) are repair mechanisms for different types of DNA damage, not DSBs. PHARMACOLOGY

Question 35. Which thiazide diuretic should be given to a 34-year-old male with hypertension and stage 4 chronic kidney disease, whose estimated glomerular filtration rate (eGFR) is below 30 mL/min?

A. Chlorothiazide

B. Chlorthalidone

C. Metolazone

D. Hydrochlorothiazide

Correct answer: C

Metolazone Thiazide and thiazide-like diuretics, such as hydrochlorothiazide (D), chlorthalidone (B), and chlorothiazide (A), exert their antihypertensive and diuretic effects by inhibiting the Na-Cl cotransporter in the distal convoluted tubule. However, their efficacy is significantly diminished when the glomerular filtration rate (GFR) falls below 30 mL/min, as insufficient drug is filtered to reach its site of action. A major exception to this rule is metolazone. Metolazone is a thiazide-like diuretic that, unlike others in its class, retains its efficacy even in patients with advanced chronic kidney disease and a low GFR. It is often used in combination with a loop diuretic in patients with refractory edema due to renal failure or heart failure. Therefore, it is the most appropriate choice in this clinical scenario.

Question 36. Which of the following options can be used for the long-term treatment of obesity?

A. Liraglutide

B. Metformin

C. Sibutramine

D. Fenfluramine

Correct answer: A

Liraglutide Several medications have been approved for the long-term management of obesity.

Liraglutide is a glucagon-like peptide-1 (GLP-1) receptor agonist. Initially developed for type 2 diabetes, it was subsequently approved at a higher dose (3.0 mg) for chronic weight management. It works by increasing satiety through its effects on the brain and by slowing gastric emptying. Metformin (B) can cause modest weight loss but is not an approved obesity treatment. Sibutramine (C) and Fenfluramine (D) are older weight-loss drugs that were withdrawn from the market due to serious cardiovascular side effects (increased risk of heart attack and stroke for sibutramine; pulmonary hypertension and valvular heart disease for fenfluramine). Therefore, among the choices provided, liraglutide is a modern, approved medication for the prolonged treatment of obesity.

Question 37. What is Topiramate used for?

A. Treatment of migraine

B. Treatment of Lennox Gastaut syndrome

C. Prophylaxis of ADHD

D. Treatment of dementia

Correct answer: B

Treatment of Lennox Gastaut syndrome Topiramate is an antiepileptic drug with multiple mechanisms of action. It has several approved indications. One of its key uses is as an adjunctive therapy for the treatment of seizures associated with Lennox-Gastaut syndrome (LGS), a severe form of childhood-onset epilepsy. It is also approved for the treatment of partial-onset and primary generalized tonic-clonic seizures. Additionally, topiramate is widely used for the prophylaxis (prevention), not the acute treatment, of migraine headaches in adults and adolescents. While option (A) is related to a use of topiramate, the term "treatment" is more accurately applied to its role in LGS, whereas its migraine role is prophylactic. It has no approved role in the management of ADHD (C) or dementia (D). Given the precise wording, its role in treating LGS is a definitive indication.

Question 38. For which medical condition is inhaled nitric oxide approved for treatment?

A. Labile hypertension

B. Pulmonary hypertension

C. Treatment of resistant migraine

D. Resistant Parkinson's disease

Correct answer: B

Pulmonary hypertension Inhaled nitric oxide (iNO) is a potent and selective pulmonary vasodilator. When inhaled, it diffuses across the alveolar-capillary membrane and relaxes the smooth muscle in the adjacent pulmonary vessels, leading to a decrease in pulmonary vascular resistance and improved ventilation-perfusion matching. Its primary FDA-approved indication is for the treatment of term and near-term neonates (>34 weeks gestation) with hypoxic

respiratory failure associated with clinical or echo cardiographic evidence of pulmonary hypertension. In this setting, iNO improves oxygenation and significantly reduces the need for more invasive therapies like extracorporeal membrane oxygenation (ECMO). It is not used for systemic hypertension (A), migraine (C), or Parkinson's disease (D), as its effects are localized to the pulmonary circulation when administered via inhalation.

Question 39. Which of the following is not a cause of the paradoxical bronchoconstrictor associated with ipratropium bromide?

A. Hypertonic saline

B. EDTA

C. Benzalkonium chloride

D. Prejunctional M2 receptor blockade

Correct answer: A

Hypertonic saline Paradoxical bronchoconstrictor is a rare but reported adverse effect of nebulized ipratropium bromide solution. This reaction is generally attributed to the drug's formulation or its pharmacology. The nebulizer solution contains excipients, such as the preservative benzalkonium chloride (C) and the chelating agent disodium edetate (EDTA) (B), both of which are known to have bronchoconstrictor properties in some susceptible individuals. A proposed pharmacological mechanism is that ipratropium, a non-selective muscarinic antagonist, can block inhibitory prejunctional M2 autoreceptors (D) on cholinergic nerve endings, leading to increased acetylcholine release that may overcome the M3 receptor blockade. In contrast, hypertonic saline (A) is not an additive in the ipratropium formulation. It is a separate therapeutic agent (a mucolytic) that is known to induce bronchoconstriction as a primary effect, but this is not a cause of paradoxical bronchoconstriction from ipratropium itself.

Question 40. What is the half-life of a drug with an elimination rate constant of 0.05 per hour?

A. 20.8 hours

B. 6.9 hours

C. 13.8 hours

D. 9.8 hours

Correct answer: C

13.8 hours For a drug following first-order elimination kinetics, the half-life ($t_{1/2}$) is given by: The closest option is 13.8 hours. This means it takes approximately 13.8 hours for the plasma concentration of the drug to decrease by 50%.

Question 41. Category A, B, C, D, X in drug classification are indicative of which of the following?

A. As per safety or therapeutic index

B. Cost ratio from cheap to expensive

C. Safety in pregnancy

D. Dose adjustment in renal failure

Correct answer: C

Safety in pregnancy The A, B, C, D, and X categories were part of the U.S. Food and Drug Administration's (FDA) classification system to indicate the potential of a drug to cause birth defects if used during pregnancy. This system provided a letter grade to summarize the level of risk to a fetus. Category A represented drugs for which adequate studies in pregnant women have shown no risk. Category B, C, and D represented increasing levels of potential risk based on animal and human data. Category X represented drugs for which studies have demonstrated fetal abnormalities, and the risk of use in pregnant women clearly outweighs any possible benefit. Although this system has been replaced in the United States by the Pregnancy and Lactation Labeling Rule (PLLR), it is still widely recognized and tested as an indicator of a drug's safety in pregnancy.

Question 42. At what dosage does dopamine function on beta-1 receptors?

A. 2-10 mcg/kg/min

B. <2 mcg/kg/min

C. 10-20 mcg/kg/min

D. >20 mcg/kg/min

Correct answer: A

2-10 mcg/kg/min Dopamine is a catecholamine with dose-dependent receptor effects, which is crucial for its clinical use as an inotrope and vasopressor. 1. Low dose (renal dose) : At infusion rates of approximately <2-5 mcg/kg/min, dopamine primarily stimulates D1 receptors, causing vasodilation in the renal, mesenteric, and coronary circulations. 2. Moderate dose (cardiac dose) : At infusion rates of approximately 2-10 mcg/kg/min, dopamine primarily stimulates beta-1 adrenergic receptors on the heart. This results in increased myocardial contractility (positive inotropy) and heart rate (positive chronotropy), leading to an increased cardiac output. 3. High dose (vasopressor dose) : At infusion rates >10 mcg/kg/min, the effects on alpha-1 adrenergic receptors predominate, causing systemic vasoconstriction and an increase in blood pressure.

Question 43. Which of the following medications would increase the bioavailability of saquinavir when given concurrently?

A. Ritonavir

B. Vitamin C

C. Cimetidine

D. Ganciclovir

Correct answer: A

Ritonavir Saquinavir is an antiretroviral drug from the protease inhibitor class. When used alone, it has very poor oral bioavailability due to extensive metabolism by the cytochrome P450 3A4 (CYP3A4) enzyme in the gut wall and liver. Ritonavir is another protease inhibitor that is also a very potent inhibitor of the CYP3A4 enzyme. This property is exploited clinically by using a low, subtherapeutic dose of ritonavir as a pharmacokinetic enhancer or "booster". When co-administered with saquinavir, ritonavir inhibits its metabolism, leading to a significant increase in saquinavir's plasma concentration and bioavailability, thereby enhancing its antiviral efficacy. This boosting strategy is a common principle in HIV therapy. The other substances listed do not have this specific and potent CYP3A4 inhibitory effect.

Question 44. How does cyclosporine work in terms of its mechanism of action?

A. Inhibition of calcineurin

B. AMP kinase stimulation

C. IMP dehydrogenase inhibition

D. Dihydro-orotate dehydrogenase inhibition

Correct answer: A

Inhibition of calcineurin Cyclosporine is a powerful immunosuppressive agent widely used in organ transplantation to prevent rejection. Its mechanism of action involves the inhibition of calcineurin. Inside a T-lymphocyte, cyclosporine first binds to an intracellular protein called cyclophilin. This cyclosporine-cyclophilin complex then binds to and inhibits calcineurin, which is a calcium- and calmodulin-dependent phosphatase enzyme. The inhibition of calcineurin prevents it from dephosphorylating the Nuclear Factor of Activated T-cells (NFAT). As a result, NFAT cannot translocate to the nucleus to act as a transcription factor. This blocks the transcription of genes for several crucial cytokines, most importantly Interleukin-2 (IL-2). By preventing IL-2 production, cyclosporine effectively suppresses the proliferation and activation of T-cells, a central step in the immune response leading to organ rejection.

Question 45. Which of the following is considered a new and innovative medication for the treatment of depression?

A. Lurasidone

B. Vilazodone

C. Asenapine

D. Blonanserin

Correct answer: B

Vilazodone Vilazodone is considered a newer antidepressant with a novel mechanism of action. It is classified as a Serotonin Partial Agonist/Reuptake Inhibitor (SPARI). It functions through a dual mechanism : it acts as a selective serotonin reuptake inhibitor (SSRI), increasing serotonin levels in the synapse, and it also acts as a partial agonist at the 5-HT1A serotonin receptor. This combination is thought to provide antidepressant effects with potentially fewer side effects,

particularly sexual dysfunction, compared to traditional SSRIs. Lurasidone (A), Asenapine (C), and Blonanserin (D) are all atypical antipsychotics. While lurasidone is also approved for treating bipolar depression, vilazodone's unique mechanism as a primary antidepressant makes it the most fitting answer for a "new and innovative" medication for depression among the choices.

Question 46. Which of the following is an opioid antitussive that acts centrally?

A. Ambroxol

B. Diphenoxylate

C. Levopropoxyphene

D. Levorphanol

Correct answer: C

Levopropoxyphene Levopropoxyphene (also called dextropropoxyphene's isomer in older classifications) is an opioid derivative that acts centrally on the cough center in the medulla, suppressing cough. Opioid antitussives reduce cough by decreasing the sensitivity of the cough center to afferent stimuli. Other options are incorrect: 1. Ambroxol is a mucolytic and expectorant; it does not act centrally. 2. Diphenoxylate is an opioid used for diarrhea and does not serve as an antitussive. 3. Levorphanol is a strong opioid analgesic and not used clinically as an antitussive. Classical centrally acting opioid antitussives include codeine and pholcodine, and levopropoxyphene falls into this category. Thus, the correct answer is Levopropoxyphene (Option C).

Question 47. Which of the following antiepileptic medications can also be used to treat neuropathic pain? 1. Pregabalin 2. Carbamazepine 3. Lamotrigine 4. Gabapentin

A. 1, 2 and 3

B. 1, 2, and 4

C. 1, 3 and 4

D. 2 and 4 only

Correct answer: B

1, 2, and 4 Several antiepileptic drugs (AEDs) are effective in the treatment of neuropathic pain due to their mechanisms of action on neuronal excitability. 1. Pregabalin and 4. Gabapentin : These drugs are structurally related and are known as gabapentinoids. They are first-line agents for many types of neuropathic pain. They work by binding to the α 2- δ subunit of voltage-gated calcium channels, which reduces the influx of calcium into presynaptic nerve terminals and subsequently decreases the release of excitatory neurotransmitters. 2. Carbamazepine : This is the first-line treatment for trigeminal neuralgia, a classic type of neuropathic pain. It works by blocking voltage-gated sodium channels. 3. Lamotrigine : While it is a broad-spectrum AED, its efficacy in treating neuropathic pain is less established and it is

generally considered a second or third-line option. Therefore, pregabalin, carbamazepine, and gabapentin are all well-recognized and commonly used treatments for various neuropathic pain conditions. FORENSIC MEDICINE

Question 48. A 24-year-old man accused of murder is detained by police. During interrogation, he is placed prone with his wrists and ankles tied behind his back and secured with a rope. What is this method of restraint called?

A. Choke/carotid hold

B. Carotid sleeper hold

C. Hogtie

D. Bar arm

Correct answer: C

Hogtie The restraint method described, where a person is placed in a prone position and their wrists and ankles are bound together behind their back, is known as hog tying. This position can be extremely dangerous as it can severely restrict breathing by limiting the movement of the chest wall and diaphragm, potentially leading to positional asphyxia, especially in agitated or obese individuals. It is a highly controversial and often prohibited form of restraint in law enforcement and medical settings due to this risk. The other options describe forms of neck restraint or chokeholds (A, B, D) and are not related to the binding of limbs as described in the scenario.

Question 49. A pelvis is submitted for forensic examination. Which characteristic would indicate that it belongs to a male? 1. Triangular obturator foramen 2. U-shaped pubic angle 3. Everted ischial tuberosity 4. Large greater sciatic notch 5. Large acetabulum 6. Deep preauricular sulcus

A. 2,3,4,5

B. 4,5,6

C. Only 5

D. 1 and 3

Correct answer: C

Only 5 This question asks for male pelvic characteristics from a list where many are incorrect or describe a female pelvis. The male obturator foramen is typically oval, while the female's is triangular. So, (1) is incorrect. The male subpubic angle is narrow and V-shaped, while the female's is wide and U-shaped. So, (2) describes a female pelvis. The ischial tuberosities are everted in females to widen the pelvic outlet. In males, they are inverted. So, (3) describes a female pelvis. The greater sciatic notch is narrow and deep in males, but the term "large" is ambiguous. It is wide and shallow in females. The male pelvis is more robust for muscle attachment, resulting in a relatively large acetabulum. This is a correct male feature. A deep, well-marked preauricular sulcus is a feature strongly associated with the female pelvis, related

to the stresses of childbirth. Given the options, the only unequivocally male characteristic listed is the large acetabulum.

Question 50. Rearrange the following to correspond with alterations in fingerprints : 1. Incomplete atrophy of ridges a. Radiation 2. Loss of pattern with ridge atrophy b. Scleroderma 3. Altered ridges c. Celiac dis- ease 4. Permanent loss of fin- gerprints d. Acromegaly 5. Distance between ridg- es changed but pattern retained e. Dermatitis

A. 1-E, 2-C, 3-B, 4-A, 5-D

B. 1-D, 2-B, 3-C, 4-E, 5-A

C. 1-C, 2-A, 3-D, 4-B, 5-E

D. 1-D, 2-C, 3-A, 4-E, 5-B

Correct answer: A

1-E, 2-C, 3-B, 4-A, 5-D Explanation of matching: 1. Incomplete atrophy of ridges → (E) Dermatitis : In dermatitis, inflammation causes partial or incomplete atrophy of epidermal ridges, but changes are usually reversible. 2. Loss of pattern with ridge atrophy → (C) Celiac disease : In Celiac disease, there may be atrophy of epidermal ridges leading to loss of fingerprint patterns. 3. Altered ridges → (B) Scleroderma : Scleroderma causes tightening and fibrosis of skin, leading to distortion and alteration of ridge patterns. 4. Permanent loss of fingerprints → (A) Radiation : Radiation exposure can permanently destroy epidermal ridges, leading to irreversible loss of fingerprints. 5. Distance between ridges changed but pattern retained → (D) Acromegaly Acromegaly causes enlargement of digits, increasing ridge spacing while preserving the overall fingerprint pattern. Thus, the correct matching is Option (A).

Question 51. Which of the following rules are used as tests to determine insanity in a given situation? 1. Durham's rule 2. Curren's rule 3. Ashley's rule 4. Murphy's rule

A. 1,2,3 and 4

B. 2,3,4 only

C. 1,2 only

D. 3,4 only

Correct answer: C

1,2 only In legal contexts, several different standards or "rules" have been developed over time to determine criminal insanity. 1. Durham's rule (also known as the "product test") states that a defendant is not criminally responsible if their unlawful act was the product of mental disease or defect. It was adopted in some U.S. jurisdictions but has largely been abandoned due to its vagueness. 2. Curren's rule is a version of the American Law Institute (ALI) test, which states that a person is not responsible for criminal conduct if at the time of such conduct, as a result of mental disease or defect, they lack substantial capacity either to appreciate the criminality of their conduct or to conform their conduct to the requirements of the law. Ashley's rule (3) and

Murphy's rule (4) (better known as Murphy's Law) are not legal standards for determining insanity. Therefore, only Durham's rule and Curren's rule are valid legal tests for insanity among the choices provided.

Question 52. By what mechanism did the injuries occur in a man brought to the emergency department?

A. Flying missiles

B. Blast of air

C. Explosion burns

D. Building collapse

Correct answer: D

Oculomotor nerve palsy Oculomotor nerve supplies most of the extraocular muscles: superior rectus, inferior rectus, medial rectus, inferior oblique, and levator palpebrae superioris. It also carries parasympathetic fibers to the pupil. In oculomotor nerve palsy: 1. The eye deviates “down and out” due to unopposed action of the lateral rectus (VI nerve) and superior oblique (IV nerve). 2. There is impaired upward, downward, and medial movement. 3. Ptosis may be present due to levator palpebrae involvement. 4. Pupil may be dilated if parasympathetic fibers are affected. The image shows limitation of multiple eye movements, not just a single direction. This excludes: 5. Medial rectus palsy (would only affect adduction) 6. Trochlear nerve palsy (primarily affects depression in adducted position) 7. Abducens nerve palsy (inability to abduct) Because several movements are restricted, the pattern is consistent with oculomotor nerve palsy. Thus, the correct diagnosis is Option (D).

Question 53. How does RNA interference (RNAi) impact gene expression?

A. Knock out

B. Knock down

C. Knock up

D. Knock in

Correct answer: B

Knock down RNA interference (RNAi) is a natural cellular process for regulating gene expression. In this process, small non-coding RNA molecules, such as small interfering RNA (siRNA) or microRNA (miRNA), bind to a specific target messenger RNA (mRNA) molecule. This binding leads to the degradation of the target mRNA or the inhibition of its translation into protein. The result is a significant reduction in the expression of the targeted gene. This process of reducing or suppressing gene expression is referred to as a "knockdown". This is distinct from a gene "knock out" (A), which refers to the complete and permanent elimination of a gene from the genome itself (at the DNA level). RNAi works at the post-transcriptional level to temporarily suppress gene expression.

Question 54. Which of the following is the best method to detect HbA1c?

A. Ion-exchange chromatography

B. Electrophoresis

C. Immunoassay

D. Affinity chromatography

Correct answer: A

Ion-exchange chromatography Several methods are used to measure Glycated Hemoglobin (HbA1c), but High-Performance Liquid Chromatography (HPLC) is considered the gold standard reference method. One of the principal forms of HPLC used for this purpose is ion-exchange chromatography. This method separates different hemoglobin variants based on their differences in electrical charge. Glycation of hemoglobin alters its charge, allowing the glycated fraction (HbA1c) to be separated from the non-glycated fraction (HbA0). This provides a highly accurate and precise quantification. While immunoassays (C) and affinity chromatography (D) are also widely used and certified methods, ion-exchange HPLC is generally regarded as the most robust reference standard for the accurate determination of HbA1c levels.

Question 55. Which of the following is the best test for quantitative analysis of an RNA sample?

A. Real-time PCR

B. Reverse Transcriptase PCR

C. PCR-Restriction Fragment Length Polymorphism

D. RT-PCR followed by Real-time PCR

Correct answer: D

RT-PCR followed by Real-time PCR To perform a quantitative analysis of RNA, two steps are required. First, the RNA must be converted into a more stable complementary DNA (cDNA) molecule. This is achieved through Reverse Transcriptase PCR (RT-PCR) (B), which uses the enzyme reverse transcriptase. Second, this newly synthesized cDNA must be quantified. Real-time PCR (A), also known as quantitative PCR (qPCR), is the gold standard method for quantifying DNA. It monitors the amplification of a target DNA sequence in real-time by using fluorescent probes. The rate at which the fluorescence accumulates is proportional to the initial amount of the target sequence. Therefore, the most accurate and standard method for quantifying an RNA sample is to first perform reverse transcription and then quantify the resulting cDNA using real-time PCR. This two-step process is often collectively referred to as qRT-PCR or RT-qPCR.

Question 56. Which of the following statements accurately describe mitochondrial DNA? 1. Higher rate of mutations as compared to the nuclear genome 2. Double-stranded circular DNA with about 16,000 base pairs 3. A slight change in nucleotide sequence as compared to cellular DNA 4. Encodes all electron transport

chain proteins

A. 1 and 3

B. 1 and 2

C. 2 and 4

D. 2 and 3

Correct answer: B

1 and 2 1. Correct. Mitochondrial DNA (mtDNA) has a higher rate of mutation than nuclear DNA. This is attributed to its proximity to reactive oxygen species generated during oxidative phosphorylation and a less efficient DNA repair system. 2. Correct. Human mtDNA is a small, double-stranded circular molecule containing approximately 16,569 base pairs. 3. Incorrect. While the sequence is different, this statement is vague and less precise than statements 1 and 2. MtDNA also has a slightly different genetic code. 4. Incorrect. This is a critical point. While mtDNA encodes 13 essential protein subunits of the electron transport chain (ETC) complexes, the vast majority of ETC proteins (around 80-90) are encoded by nuclear DNA, synthesized in the cytoplasm, and then imported into the mitochondria. Therefore, the two most accurate and defining statements are that mtDNA has a higher mutation rate and is a small, circular molecule.

Question 57. A patient presents with severe watery diarrhea resembling “rice-gruel stools.” Damage to which cellular structure is most likely responsible for this type of diarrhea?

A. Zona occludens

B. Gap junction

C. Adherent junction

D. Hemidesmosomes

Correct answer: A

Zona occludens "Rice-water stool" is the pathognomonic sign of cholera, an infection caused by Vibrio cholerae. The cholera toxin causes a secretory diarrhea, but many severe diarrheal diseases involve disruption of the intestinal barrier. The zona occludens, also known as the tight junction, is the cell-cell junction that forms a seal between adjacent epithelial cells. It is the primary structure that regulates the paracellular pathway (the space between cells), preventing the leakage of fluid, electrolytes, and solutes from the lumen into the bloodstream and vice-versa. Certain bacterial toxins, including one produced by V. cholerae (zonula occludens toxin), can directly damage and disrupt the integrity of tight junctions. This leads to a massive increase in paracellular permeability, contributing to the profound loss of fluid and electrolytes into the intestinal lumen, resulting in severe watery diarrhea.

Question 58. The blood investigation of a patient is given below. What is the probable diagnosis? • HBsAg : Non-reactive • HBeAg : Non-reactive • IgG anti-HBcAg

: Reactive • IgM anti-HBcAg : Non-reactive

A. Acute hepatitis B

B. Chronic hepatitis B

C. Remote infection of hepatitis B

D. Core window period NODIA MEDINK

Correct answer: C

10 L/min The question likely refers to a simple face mask or a non-rebreather mask, which are considered "traditional." A simple face mask is typically run at flow rates of 5-10 L/min to prevent rebreathing of carbon dioxide. A non-rebreather mask (NRB) is designed to deliver a high concentration of oxygen. It has a reservoir bag that should be kept inflated by a sufficiently high oxygen flow rate. The standard flow rate for an NRB is 10 to 15 L/min. This high flow is necessary to fill the reservoir bag and deliver an FiO2 of up to 80-95%. Therefore, 15 L/min is the maximum conventional flow rate for this type of device. High-flow nasal cannula systems can deliver much higher flow rates (up to 60 L/min or more), but they are not considered a "traditional oxygen mask."

Question 59. Which microorganism is most likely to cause meningitis in a neonate who presents with increased irritability, poor feeding, and seizures, as confirmed by lumbar puncture findings?

A. Streptococcus agalactiae

B. Escherichia coli

C. Neisseria meningitidis

D. Listeria monocytogenes

Correct answer: A

Streptococcus agalactiae Neonatal meningitis (occurring in the first month of life) is caused by a specific group of pathogens typically acquired from the mother's genital tract during birth. The most common causative organisms are Group B Streptococcus (GBS), which is Streptococcus agalactiae, and Escherichia coli (especially K1 capsular strains). Listeria monocytogenes is also a significant cause. In most regions, GBS is considered the leading cause of both early-onset (<7 days) and late-onset (7-90 days) neonatal sepsis and meningitis. Neisseria meningitidis (C) is a common cause of meningitis in older children and young adults but is rare in the neonatal period. While E. coli and Listeria are possibilities, Streptococcus agalactiae is the most frequent pathogen responsible for this devastating infection in newborns.

Question 60. Which of the following statements accurately reflects the characteristics of trematodes?

A. Fasciola hepatica is seen in the intrahepatic biliary radicles

B. Schistosoma are monoecious

C. Fasciola hepatica is acquired through contaminated water

D. Triclabendazole is the treatment of choice for all trematode infections

Correct answer: A

Fasciola hepatica is seen in the intrahepatic biliary radicles (A) Correct. Fasciola hepatica, the sheep liver fluke, causes fascioliasis. The adult flukes reside in the large biliary ducts and gallbladder of the host, causing inflammation and obstruction. (B) Incorrect. Most trematodes (flukes) are monoecious (hermaphroditic). The major exception is Schistosoma (blood flukes), which are dioecious, meaning they have separate male and female sexes. (C) Incorrect. The infection is acquired by ingesting metacercariae encysted on aquatic plants, most classically watercress, not by drinking contaminated water directly. (D) Incorrect. Praziquantel is the drug of choice for most trematode infections (including schistosomiasis and clonorchiasis). Triclabendazole is specifically the drug of choice for fascioliasis, but not for all trematodes.

Question 61. "What principle forms the basis of the Paul- Bunnell test performed for a 24-year-old male presenting with cervical lymphadenopathy?"

A. Complement fixation

B. Superantigens

C. Heterophile antibodies

D. Haptens

Correct answer: C

Heterophile antibodies The clinical presentation of cervical lymphadenopathy in a young adult is classic for infectious mononucleosis, which is caused by the Epstein-Barr virus (EBV). The Paul-Bunnell test is a classic laboratory test used to diagnose this condition. The principle of the test is the detection of heterophile antibodies. These are antibodies (typically IgM) that are produced during an EBV infection and have the unusual property of cross-reacting with and agglutinating red blood cells from other species, such as sheep and horses. A positive Paul-Bunnell test (or a more modern Monospot test, which works on the same principle) demonstrates the presence of these heterophile antibodies, providing strong evidence for a diagnosis of infectious mononucleosis.

Question 62. Which one of these options is classified as a dematiaceous fungus?

A. Mucor species

B. Aspergillus niger

C. Cladosporium

D. Blastomyces dermatitidis

Correct answer: C

Cladosporium Dematiaceous fungi are a group of fungi whose cell walls contain melanin. This melanin imparts a characteristic dark brown or black color to their spores and/or hyphae. They are responsible for a range of infections, including phaeohyphomycosis and chromoblastomycosis. Cladosporium is a classic example of a dematiaceous mold; it is a

common airborne fungus that appears dark green to black. In contrast, Mucor species (A) are zygomycetes characterized by broad, non-septate, hyaline (non-pigmented) hyphae. Aspergillus niger (B), despite its name, produces black spores but has hyaline hyphae, and is generally not classified as dematiaceous. Blastomyces dermatitidis (D) is a dimorphic fungus that grows as a hyaline mold in the environment and as a yeast in tissues.

Question 63. Which of the following organisms is considered a strict anaerobe?

A. Prevotella

B. Burkholderia cepacia

C. Yersinia enterocolitica

D. Stenotrophomonas maltophilia

Correct answer: A

Prevotella A strict (or obligate) anaerobe is a microorganism that cannot grow in the presence of oxygen and may even be killed by it. They lack the enzymes (like catalase and superoxide dismutase) needed to detoxify reactive oxygen species produced during aerobic respiration. Prevotella is a genus of Gram-negative bacteria that are classic examples of obligate anaerobes. They are part of the normal flora of the human mouth, gut, and vagina and are often implicated in anaerobic infections like dental abscesses and aspiration pneumonia. The other organisms listed are not strict anaerobes. Burkholderia cepacia (B) and Stenotrophomonas maltophilia (D) are aerobic Gram-negative rods. Yersinia enterocolitica (C) is a facultative anaerobe, meaning it can grow either with or without oxygen.

Question 64. The method most commonly used for identifying RNA in molecular analysis is Northern blotting. NODIA MEDINK

A. G banding

B. Sanger's method

C. RT-PCR

D. Western blot

Correct answer: C

RT-PCR Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) is a highly sensitive and specific molecular technique used to detect and amplify RNA sequences. The process involves two key steps. First, the enzyme reverse transcriptase is used to create a complementary DNA (cDNA) copy of the target RNA molecule. Second, this cDNA is then amplified exponentially using the standard Polymerase Chain Reaction (PCR). This method allows for the detection of even very small quantities of a specific RNA molecule, making it invaluable for applications like the diagnosis of RNA virus infections (e.g., SARS-CoV-2, HIV), and in research for studying gene expression. G banding (A) is for visualizing chromosomes. Sanger's method (B) is for DNA sequencing. Western blot (D) is for identifying proteins. PSM

Question 65. Which of the statements below is correct?

A. In a population with low prevalence of the disease, a positive result with a highly sensitive test means true positive

B. Sensitivity depends on prevalence of the disease

C. Positive predictive value depends on prevalence of disease

D. Specificity depends on prevalence of the disease

Correct answer: C

Positive predictive value depends on prevalence of disease Sensitivity (the ability to correctly identify true positives) and specificity (the ability to correctly identify true negatives) are intrinsic properties of a diagnostic test and do not depend on the prevalence of the disease in the population being tested (making B and D incorrect). In contrast, the predictive values of a test are highly dependent on the disease prevalence. The Positive Predictive Value (PPV) is the probability that a person with a positive test result actually has the disease. The PPV will increase as the prevalence of the disease increases, and it will decrease as the prevalence decreases. In a low-prevalence population, even a highly accurate test will have a lower PPV, meaning a positive result is more likely to be a false positive (making A incorrect).

Question 66. Based on the 2010–2013 verbal autopsy report, list the leading causes of death in children aged 1–4 years in decreasing order of frequency. 1. Diarrhea 2. Pneumonia 3. Malaria 4. Injuries

A. 2>1>3>4

B. 4>1>2>3

C. 1>2>4>3

D. 2>1>4>3

Correct answer: D

2>1>4>3 According to the Indian Million Death Study verbal autopsy report for 2010-2013, infectious diseases were the leading causes of death in children aged 1-4 years (12-59 months). The leading cause was pneumonia, responsible for a significant proportion of mortality in this age group. This was followed closely by diarrheal diseases. After these two major infectious causes, injuries (including drowning, falls, and traffic accidents) emerged as the third leading cause of death. Malaria was a significant cause but ranked lower than the top three in this specific age group during that period. Therefore, the correct descending order of frequency is Pneumonia > Diarrhea > Injuries > Malaria.

Question 67. Which of the following is included in the Pentavalent vaccine?

A. Diphtheria, Pertussis, Tetanus, HBV, Injectable Polio

B. Diphtheria, Pertussis, Typhoid, HBV, Hib

C. Diphtheria, Pertussis, Tetanus, Haemophilus influenzae B, Pneumococcal vaccine

D. Diphtheria, Tetanus, HBV, Hemophilus influenzae B, Pertussis

Correct answer: D

Diphtheria, Tetanus, HBV, Haemophilus influenzae B, Pertussis The Pentavalent vaccine is a combination vaccine designed to protect against five major childhood diseases with a single injection. As per India's Universal Immunization Programme (UIP), the Pentavalent vaccine includes antigens for : 1. Diphtheria 2. Pertussis (Whooping Cough) 3. Tetanus (These three are the traditional DPT vaccine) 4. Hepatitis B (HBV) 5. Hemophilus influenza type b (Hib) (which causes meningitis and pneumonia) Therefore, the correct combination is Diphtheria, Tetanus, Pertussis, Hepatitis B, and Hemophilus influenzae type b.

Question 68. Which vaccine is linked to the risk of intussusception when administered?

A. Rotavirus vaccine

B. Oral Polio vaccine

C. Adenovirus vaccine

D. Measles vaccine

Correct answer: A

Rotavirus vaccine Intussusception is a condition where one segment of the intestine telescopes into an adjacent segment, which can cause a bowel obstruction. An older rotavirus vaccine (RotaShield) was withdrawn from the market in 1999 due to a strong association with an increased risk of intussusception. The currently available oral rotavirus vaccines (e.g., RotaTeq and Rotarix) have a much lower, but still slightly increased, risk of this adverse event, particularly within the first week after the first or second dose. The risk is considered very small (approximately 1-2 excess cases per 100,000 vaccinated infants) and is far outweighed by the significant benefits of the vaccine in preventing severe and life-threatening rotaviral gastroenteritis. No such association is established for the other vaccines listed.

Question 69. What does the standardized age mortality ratio indicate?

A. Death rate of a population adjusted to a standard age distribution

B. Death rate of a population adjusted to a standard sex distribution

C. Removal of bias due to different age group population in different countries

D. To eliminate age structure of different countries

Correct answer: A

Death rate of a population adjusted to a standard age distribution This question appears to confuse two related concepts : age-standardized mortality rate and Standardized Mortality Ratio (SMR). Based on the options, it is referring to the age-standardized (or age-adjusted) mortality rate. This is a method used to compare mortality rates between two or more populations that have different age structures. It calculates the death rate that a population would have if it had a "standard" age distribution (A). This process removes the confounding effect of age, allowing for a more accurate comparison of mortality trends over time or between

different geographic regions (C, D are related concepts). For example, a country with an older population will naturally have a higher crude death rate, and age-standardization allows for a fair comparison with a country that has a younger population.

Question 70. What factor is the external validity of a screening test associated with?

A. Stability

B. Objectivity

C. Generalizable

D. Repeatability

Correct answer: C

Generalizability In the context of research and testing, validity refers to the accuracy of a measure. External validity specifically refers to the extent to which the results of a study or test can be generalized to other populations, settings, or times. For a screening test, this means asking if the test's performance characteristics (like its sensitivity, specificity, and predictive values) observed in a research study population will hold true when the test is applied to the broader, real-world population it is intended for. Therefore, external validity is directly associated with the generalizable of the test's results. Repeatability (D) and stability (A) are aspects of reliability (precision), not validity (accuracy). Objectivity (B) refers to the degree to which a test is free from scorer bias.

Question 71. What term is used to describe the recent increase in the occurrence of non-communicable diseases?

A. Secular

B. Seasonal

C. Cyclical

D. Periodic

Correct answer: A

Secular A secular trend in epidemiology refers to a change in the incidence or prevalence of a disease over a long period, typically years or decades. The observed consistent increase in the burden of non-communicable diseases (NCDs) like diabetes, hypertension, and cancer across the globe over the past several decades is a classic example of a secular trend. This trend is linked to long-term changes in lifestyle, diet, environment, and demographics as part of the epidemiologic transition. Seasonal variation (B) refers to changes that occur within a single year (e.g., influenza in winter). Cyclical trends (C) refer to fluctuations that occur over a period of several years (e.g., measles outbreaks before widespread vaccination).

Question 72. Which study design is the most effective for demonstrating a cause-and-effect relationship among the options listed?

A. Case control study

B. Cohort study

C. Cross-sectional study

D. Clinical trial

Correct answer: D

Clinical trial Among all study designs, the Randomized Controlled Trial (RCT), a type of clinical trial, provides the strongest evidence for a cause-and-effect relationship. In an RCT, the investigator actively allocates an exposure (the "cause," e.g., a new drug) to one group and a placebo or standard treatment to another, and then follows both groups to observe the outcome (the "effect"). The key features of randomization and a control group minimize confounding and bias, allowing for a strong inference of causality. Among observational studies, a cohort study (B) is the strongest design for assessing causality, as it establishes the temporal sequence (exposure precedes outcome). However, a well-conducted RCT is considered the gold standard and provides a higher level of evidence than any observational design.

Question 73. According to the 2010–2013 verbal autopsy report, arrange the following causes of neonatal mortality in descending order—from the highest to the lowest. 1. Prematurity and low birth weight 2. Birth injuries and birth asphyxia 3. Congenital anomalies 4. Sepsis

A. 1>2>4>3

B. 1>4>2>3

C. 4>1>2>3

D. 1>2>3>4

Correct answer: B

1>4>2>3 The Million Death Study's verbal autopsy reports provided crucial insights into the causes of neonatal mortality in India for the period 2010-2013. The data showed that the single largest cause of death in the neonatal period (the first 28 days of life) was complications related to prematurity and low birth weight (1). The second leading cause was infections, primarily sepsis and pneumonia (4). The third leading cause was birth asphyxia and birth injuries (2). Finally, congenital anomalies (3) were the fourth most common cause. Therefore, the correct sequence in descending order of frequency is Prematurity/LBW > Sepsis > Birth Asphyxia/Injury > Congenital Anomalies.

Question 74. Which one of the following is not a component of meta-analysis?

A. Selection

B. Analysis

C. Randomization

D. Abstraction

Correct answer: C

Randomization A meta-analysis is a statistical method used to combine the results of multiple

independent studies to derive a single, more powerful conclusion. The process involves several key steps : 1. Selection : Defining clear inclusion and exclusion criteria to select the relevant studies for the analysis. 2. Abstraction : Systematically extracting the relevant data (e.g., sample size, effect estimates, standard errors) from each selected study. 3. Analysis : Using statistical techniques to pool the data and calculate an overall summary effect measure. 4. Randomization, however, is a component of the design of the primary studies being analyzed (specifically, randomized controlled trials). It is not a component of the meta-analysis process itself. A meta-analysis analyzes studies that may or may not have used randomization; it does not perform randomization.

Question 75. Which initial screening tests are used at a primary health centre (PHC) to diagnose diabetes? 1. HbA1c>6.5 2. Fasting blood sugar >126 mg/dl 3. Random blood sugar >200 mg/dl 4. 2-hour post glucose load blood sugar

A. 1 and 2

B. 1 and 3

C. 2 and 4

D. 1,2 and 3

Correct answer: C

2 and 4 At the PHC level, screening focuses on accessibility and immediate results. The diagnostic criteria used are: 1. Fasting Blood Sugar > 126 mg/dl (2): This is a standard initial test where blood glucose is measured after at least 8 hours of no caloric intake. 2. 2-hour post glucose load blood sugar (4): Also known as the Oral Glucose Tolerance Test (OGTT), this measures the body's response to a standardized sugar load. Why other options are less common at a PHC 3. HbA1c (1): While highly accurate for long-term monitoring, HbA1c testing is often not available as an "initial screening" tool at many basic PHCs due to cost and the need for more complex laboratory equipment. 4. Random Blood Sugar (3): While often used for quick triage, a single random reading typically requires confirmation with fasting or post-load tests to be definitive for a diagnosis unless the patient is in a clear hyperglycemic crisis. ENT

Question 76. Which of the following is not considered a major diagnostic criterion for allergic fungal sinusitis?

A. Presence of nasal polyps

B. Eosinophilic mucin without invasion

C. Characteristic CT findings

D. Positive fungal culture

Correct answer: D

Positive fungal culture Allergic fungal rhinosinusitis (AFRS) is a non-invasive form of fungal sinusitis driven by an allergic reaction to fungal elements. The definitive diagnosis is based on the Bent and Kuhn major criteria : 1. Type I (IgE-mediated) hypersensitivity to fungi. 2. Nasal

polyposis (A). 3. Characteristic CT findings (C) (heterogeneous hyperdense material within the sinuses). 4. Eosinophilic mucin (allergic mucin) containing fungal hyphae, but without evidence of tissue invasion (B). 5. Positive fungal stain of the sinus contents. 6. A positive fungal culture (D), while supportive, is not a major criterion. Fungal cultures are only positive in about 50-60% of cases, and the presence of fungi in the nose can be due to colonization rather than a true infection. The diagnosis hinges on finding the characteristic allergic mucin with fungal elements on histopathology, regardless of the culture result.

Question 77. Which investigation would be most useful for a patient presenting with sinusitis, ulcerative nasopharyngeal lesions, nodular lung lesions with cavitations, and renal failure?

A. Test for ANCA

B. Biopsy to show granuloma

C. AFB staining of sputum

D. BAL (Bronchoalveolar lavage)

Correct answer: A

Test for ANCA The patient's clinical presentation forms a classic triad of upper respiratory tract disease (sinusitis, nasopharyngeal ulcers), lower respiratory tract disease (cavitating lung nodules), and renal disease (likely a rapidly progressive glomerulonephritis). This triad is the hallmark of Granulomatosis with Polyangiitis (GPA), previously known as Wegener's granulomatosis. GPA is a systemic autoimmune disease characterized by small-vessel vasculitis. The most beneficial and highly specific initial blood investigation for GPA is a test for Anti-Neutrophil Cytoplasmic Antibodies (ANCA). Approximately 80-95% of patients with active, generalized GPA test positive for ANCA, typically with a cytoplasmic staining pattern (c-ANCA) that is directed against the proteinase-3 (PR3) antigen. While a tissue biopsy showing necrotizing granulomatous inflammation (B) is the gold standard for a definitive diagnosis, the ANCA test is a crucial, less invasive serological marker that strongly supports the diagnosis and helps guide further management. AFB staining (C) is for tuberculosis, which would not typically cause this full triad with renal failure.

Question 78. A 55-year-old patient develops an asymptomatic submandibular mass with foul-smelling discharge containing yellow granules three days after a tooth extraction, and Gram stain shows gram-negative filamentous rods. What is the most likely causative organism?

A. Chromoblastomycosis

B. Mucormycosis

C. Actinomyces israelii Click Here to Buy book on Amazon MEDINK

D. Rimonabant

Correct answer: A

Varenicline Among the first-line pharmacotherapies available for smoking cessation, varenicline has consistently demonstrated the highest rates of efficacy in numerous clinical trials and meta-analyses. Varenicline is a partial agonist at the α 4 β 2 nicotinic acetylcholine receptor. As a partial agonist, it has a dual action : it mildly stimulates the receptor to reduce the severity of nicotine withdrawal symptoms (agonist effect), and it simultaneously blocks nicotine from binding to the receptor, which reduces the rewarding and reinforcing effects of smoking (antagonist effect). While nicotine replacement therapies like nicotine gum (C) and bupropion are also effective and recommended, varenicline generally leads to higher long-term abstinence rates. Buspirone (B) is an anxiolytic and is not effective for smoking cessation. Rimonabant (D) was withdrawn from the market due to severe psychiatric side effects.

Question 79. Which of the following methods is most commonly used to identify RNA in molecular analysis?

A. G banding

B. Sanger's method

C. RT-PCR

D. Western blot

Correct answer: C

RT-PCR Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) is a cornerstone molecular biology technique used specifically for the detection and analysis of RNA. The method first uses the enzyme reverse transcriptase to synthesize a complementary DNA (cDNA) strand from a specific RNA template. This cDNA molecule is then used as a template for exponential amplification through the standard Polymerase Chain Reaction (PCR). This two-step process allows for the highly sensitive and specific detection of even minute quantities of a target RNA sequence. It is widely used for diagnosing infections caused by RNA viruses (like influenza and SARS-CoV-2) and for studying gene expression at the mRNA level. G banding (A) analyzes chromosomes, Sanger's method (B) is for DNA sequencing, and Western blot (D) is used to identify proteins. OPHTHALMOLOGY

Question 80. Which tumor is most commonly found in the lacrimal gland?

A. Adenoid cystic carcinoma

B. Non-Hodgkin Lymphoma

C. Pleomorphic adenoma

D. Mucoepidermoid carcinoma

Correct answer: C

Pleomorphic adenoma Pleomorphic adenoma is the most common tumor of the lacrimal gland. It is a benign epithelial tumor, also known as a benign mixed tumor, and resembles pleomorphic adenoma of the salivary glands because the lacrimal gland is structurally similar to salivary tissue. Clinically, pleomorphic adenoma presents as: 1. Slowly progressive, painless

swelling in the superolateral orbit 2. Downward and medial displacement of the globe 3. No pain or rapid progression (suggesting benign nature) It is important to avoid incisional biopsy before complete excision because incomplete removal can lead to recurrence or malignant transformation. In contrast: 4. Adenoid cystic carcinoma is the most common malignant lacrimal gland tumor but less common overall than pleomorphic adenoma. 5. Non-Hodgkin lymphoma can involve the lacrimal gland but is not the most common primary tumor. 6. Mucoepidermoid carcinoma is rare in the lacrimal gland. Thus, the most common lacrimal gland tumor is pleomorphic adenoma.

Question 81. What is the most frequently observed eye symptom of COVID-19?

A. Retinal vein thrombosis

B. Viral keratouveitis

C. Follicular conjunctivitis

D. Pseudomembranous conjunctivitis

Correct answer: C

Follicular conjunctivitis While SARS-CoV-2 can cause a spectrum of ocular issues, the most common and frequently reported manifestation is conjunctivitis. This typically presents as a mild, benign, and self-limiting condition. The characteristic feature of this viral conjunctivitis is a follicular reaction, where small, dome-shaped lymphoid follicles appear on the palpebral conjunctiva, particularly in the inferior fornix. Symptoms usually include redness, watering, a foreign-body sensation, and mild discharge. While more severe complications like retinal vein thrombosis (A) have been documented, they are rare and associated with the systemic hypercoagulable state of severe COVID-19. Similarly, keratouveitis (B) and pseudomembranous conjunctivitis (D) have been reported but are much less common than the typical follicular conjunctivitis, which can be one of the initial presenting symptoms of the disease.

Question 82. Which medication should be avoided in a patient with angle-closure glaucoma who also has major depressive disorder?

A. Amitriptyline

B. Sertraline

C. Mirtazapine

D. Fluvoxamine

Correct answer: A

Amitriptyline A patient with angle-closure glaucoma has an anatomically narrow anterior chamber angle, making them susceptible to an acute attack if the pupil dilates (mydriasis). Several medications can induce mydriasis, particularly those with anticholinergic properties. Among the antidepressants listed, the tricyclic antidepressants (TCAs) have the most potent anticholinergic side effects. Amitriptyline is a TCA with strong anticholinergic activity, which can cause pupillary dilation and precipitate a dangerous acute angle-closure attack. For this reason,

it is relatively contraindicated in patients with untreated narrow angles. In contrast, the selective serotonin reuptake inhibitors (SSRIs), such as sertraline (B) and fluvoxamine (D), have very weak to negligible anticholinergic effects and are considered much safer in this context. Mirtazapine (C) has some antihistaminic effects but is significantly less anticholinergic than amitriptyline.

Question 83. A 42-year-old man recovering from COVID-19 and isolating at home comes to the emergency department with breathing difficulty. He is alert and responsive but tachypneic, with an SpO_2 of 86%. He is given oxygen through a face mask with a reservoir bag at 10 L/min, and after one hour his SpO_2 only increases to 88%. What should be the next step in his management?

A. Increase flow rate to 15 L/min

B. High-flow nasal cannula oxygen therapy

C. Endotracheal intubation

D. No specific intervention necessary

Correct answer: B

High-flow nasal cannula oxygen therapy The patient has significant hypoxemia (SpO_2 86%) due to COVID-19, which is not responding adequately to a non-rebreather mask at a high flow rate. An SpO_2 of 88% is still unacceptably low. Increasing the flow rate on the non-rebreather mask to 15 L/min (A) is unlikely to provide a significant improvement, as 10 L/min should already be sufficient to keep the reservoir bag inflated. The patient is awake and alert, so immediate endotracheal intubation (C) may not be necessary yet. The most appropriate next step in escalating respiratory support for this type of hypoxemic respiratory failure is High-Flow Nasal Cannula (HFNC) oxygen therapy. HFNC can deliver a very high flow (up to 60 L/min) of heated, humidified air with a precisely controlled fraction of inspired oxygen (FiO 2) up to 100%. It also provides some positive end-expiratory pressure (PEEP), which helps to recruit alveoli and improve oxygenation.

Question 84. In neuromuscular monitoring, tetanic stimulation is generally delivered at what frequency?

A. 0.2 Hz

B. 2 Hz

C. 20 Hz

D. 50 Hz

Correct answer: D

50 Hz Neuromuscular monitoring is used during anesthesia to assess the degree of muscle paralysis induced by neuromuscular blocking agents. Several patterns of electrical stimulation can be applied to a peripheral nerve. Tetanic stimulation involves delivering a continuous, high-frequency electrical stimulus for a short duration (typically 5 seconds). The standard

frequency used for this is 50 Hz (50 impulses per second), as this is the physiological frequency required to produce a sustained, tetanic muscle contraction. In a non-paralyzed muscle, this stimulation results in a sustained contraction. In the presence of a non-depolarizing neuromuscular blocker, the response will show a characteristic "fade," where the strength of the contraction diminishes over the 5-second period. Train-of-four stimulation uses a frequency of 2 Hz (B), but tetanic stimulation specifically uses 50 Hz.

Question 85. What is the highest oxygen flow rate that a standard (traditional) oxygen mask can deliver?

A. 5 L/min

B. 15 L/min

C. 10 L/min

D. 20 L/min NODIA MEDINK

Correct answer: C

Remote infection of hepatitis B This pattern of serological markers indicates a past or resolved Hepatitis B virus (HBV) infection. 1. HBsAg : Non-reactive means there is no active infection. 2. IgM anti-HBcAg : Non-reactive rules out an acute infection (within the last 6 months). 3. IgG anti-HBcAg : Reactive is the key marker indicating that the patient has been infected with HBV at some point in the past. It persists for life. This combination—negative HBsAg but positive IgG anti-HBc—is characteristic of a remote or past infection. To differentiate between a resolved infection and a rare case of occult chronic infection, the anti-HBs status would be needed (positive anti-HBs would confirm resolved infection and immunity). "Core window period" (D) is incorrect because IgM anti-HBc would be positive. Acute (A) and chronic (B) hepatitis are incorrect because HBsAg is negative.

Question 86. Rearrange the following options to show the correct order of symptom development in iron toxicity. 1. Healing with scarring 2. Latent phase 3. Gastrointestinal irritation 4. Liver failure and hypoglycemia

A. 2,3,1,4

B. 2,3,4,1

C. 3, 2, 4, 1

D. 3, 4, 1, 2

Correct answer: C

3, 2, 4, 1 Acute iron poisoning classically follows a sequence of four or five distinct clinical stages : 1. Stage 1 (0-6 hours) : This stage is dominated by the direct corrosive effects of iron on the gastrointestinal mucosa, leading to symptoms of gastrointestinal irritation (3), such as nausea, vomiting (often bloody), abdominal pain, and diarrhea. 2. Stage 2 (6-24 hours) : This is the latent phase (2), a period of apparent clinical improvement where the initial GI symptoms may subside. This phase can be deceptive, as the patient is still absorbing iron and systemic

toxicity is developing. 3. Stage 3 (12-48 hours) : This stage is characterized by profound systemic toxicity, including shock, severe metabolic acidosis, coagulopathy, and end-organ damage, particularly liver failure and hypoglycemia (4). 4. Stage 4 (2-6 weeks) : This is the late stage, where survivors may develop complications from healing with scarring (1), most notably gastric outlet obstruction or intestinal strictures. The correct chronological sequence is 3 → 2 → 4 → 1.

Question 87. A 40-year-old woman presents with jaundice, fever, and abdominal pain and is suspected to have cholangitis. Apart from abdominal pain, which features constitute Reynold's pentad? 1. Fever 2. Jaundice 3. Hypotension 4. Altered sensorium 5. Hematemesis 6. Melena

A. 1,2,3,4

B. 2,3,4,5

C. 1,3,4,5

D. 1,2,4,5 NODIA page 617 INICET Examination Paper 172. What is the fasting blood glucose cut-off value recommended by the IADPSG (International Association of Diabetes and Pregnancy Study Group) for the diagnosis of gestational diabetes mellitus (GDM)?

Correct answer: A

>92 mg/dL The International Association of the Diabetes and Pregnancy Study Groups (IADPSG) proposed a one-step approach for diagnosing Gestational Diabetes Mellitus (GDM), which has been adopted by many organizations, including the WHO and the American Diabetes Association. This approach involves a 75-gram, 2-hour oral glucose tolerance test (OGTT) performed between 24 and 28 weeks of gestation. GDM is diagnosed if any one of the following plasma glucose values is met or exceeded : 1. Fasting : ≥92 mg/dL 2. 1-hour : ≥180 mg/dL 3. 2-hour : ≥153 mg/dL Therefore, the specific IADPSG cut-off for the fasting blood glucose value is 92 mg/dL. The older two-step Carpenter-Coustan criteria used a fasting cut-off of >95 mg/dL (B). 173. What steps would you take to identify the cause of postmenopausal bleeding in a 62-year- old woman with a history of diabetes and hypertension? (A) Pap smear (B) Visual inspection with iodine (C) Colposcopy (D) Endometrial sampling AAns (D) Endometrial sampling Postmenopausal bleeding (PMB) is considered a cardinal sign of endometrial cancer until proven otherwise. Any episode of vaginal bleeding occurring one year or more after menopause requires a thorough evaluation of the endometrium. The patient's risk factors for endometrial cancer are also significant (age, diabetes, hypertension). The most important and definitive step in the workup is to obtain a tissue sample from the uterine lining for histological analysis. This can be done via an office-based endometrial biopsy (a form of endometrial sampling) or a formal dilatation and curettage (D&C), often with hysteroscopy. A Pap smear (A) is a screening test for cervical cancer, not endometrial cancer, although it can occasionally detect endometrial cells. Visual inspection (B) and colposcopy (C) are used to evaluate the cervix, not the

endometrium. 174. What does the World Health Organization (WHO) recommend for the management of the second stage of labor? (A) Mandatory episiotomy (B) Manual perineal support and warm compresses (C) Maintain head in deflexion and deliver (D) Deliver in lithotomy position only AAns (B) Manual perineal support and warm compresses The World Health Organization (WHO) emphasizes a patient-centered, evidence-based approach to childbirth. For the management of the second stage of labor in a woman at low risk, the WHO recommends several practices to promote a positive birth experience and reduce trauma. These include encouraging the woman to push in a position of her choice and using techniques to protect the perineum. Specifically, the guidelines support the use of manual perineal support (guarding the perineum) and the application of warm compresses to the perineum during the second stage. These interventions have been shown to reduce the risk of third and fourth-degree perineal tears. The WHO explicitly recommends against routine or mandatory episiotomy (A). It also advises against maintaining the head in deflexion (C); flexion is the desired attitude. It encourages women to deliver in positions other than the lithotomy position (D). 175. Which diagnostic test is most effective for distinguishing obstructive azoospermia from testicular azoospermia in an infertile couple? (A) Serum FSH levels (B) Serum testosterone levels (C) Testicular biopsy (D) Serum LH levels AAns (A) Serum FSH levels Azoospermia is the absence of sperm in the ejaculate. It can be caused by a blockage in the reproductive tract (obstructive azoospermia) or a failure of the testes to produce sperm (non-obstructive or testicular azoospermia). Measuring the serum Follicle-Stimulating Hormone (FSH) level is the most important initial blood test to differentiate between these two causes. The Sertoli cells in the testes produce inhibin B, which exerts negative feedback on pituitary FSH secretion. In non-obstructive azoospermia, the damaged testes fail to produce sperm and inhibin B, leading to a loss of negative feedback and consequently high serum FSH levels. In obstructive azoospermia, spermatogenesis is normal, so inhibin B levels are normal, and therefore FSH levels are also normal. Testosterone (B) and LH (D) levels can provide additional information but are less specific for differentiating the cause of azoospermia. 176. What is the prescribed dosage of dexamethasone administered to promote fetal lung maturity? (A) 2 doses of 6 mg given 12 hours apart (B) 2 doses of 12 mg given 24 hours apart (C) 4 doses of 6 mg given 12 hours apart (D) 4 doses of 12 mg given 12 hours apart AAns (C) 4 doses of 6 mg given 12 hours apart Antenatal corticosteroids are administered to pregnant women at risk of preterm delivery to accelerate fetal lung maturation and reduce the risk of neonatal respiratory distress syndrome. The two standard corticosteroid regimens are betamethasone and dexamethasone. The recommended regimen for dexamethasone consists of four intramuscular doses of 6 mg each, given 12 hours apart, for a total dose of 24 mg. The alternative regimen using betamethasone consists of two intramuscular doses of 12 mg each, given 24 hours apart (B), also for a total dose of 24 mg. Both regimens are considered equally effective. The question specifically asks for the dexamethasone dosage, which is 6 mg every 12 hours for a total of four

doses. 177. Which emergency contraceptive is commonly utilized in India among the options provided? (A) Levonorgestrel 1.5 mg (B) Misoprostol 400 mcg (C) Ethinyl estradiol 600 mcg (D) Ulipristal 30 mg AAns (A) Levonorgestrel 1.5 mg The most widely available and commonly used dedicated oral emergency contraceptive pill (ECP) in India, and indeed globally, is levonorgestrel. It is most effective when taken as soon as possible after unprotected intercourse. The standard regimen is a single dose of 1.5 mg. It is readily available over-the-counter in pharmacies under various brand names (e.g., i-Pill, Unwanted-72). Ulipristal acetate (D) is another effective oral ECP, but it is less commonly available in India and often requires a prescription. Misoprostol (B) is a prostaglandin analogue used for medical abortion and labor induction, not as an emergency contraceptive. High-dose ethinyl estradiol (C) was part of the older, less effective, and side-effect-prone Yuzpe regimen, which is no longer recommended. 178. What medication is recommended for treating foul-smelling vaginal discharge in a 24-year- old woman, based on the provided microscopic image? (A) Clindamycin (B) Cotrimoxazole (C) Azithromycin (D) Metronidazole AAns (D) Metronidazole The microscopic image displays "clue cells," which are vaginal epithelial cells that are heavily coated with bacteria, giving them a stippled or granular appearance and obscuring the cell borders. The presence of clue cells on a saline wet mount is the most reliable diagnostic sign of bacterial vaginosis (BV). BV is a common cause of vaginal discharge, which is typically thin, grayish-white, and has a characteristic "fishy" odor, especially after intercourse. It is a polymicrobial condition involving an overgrowth of anaerobic bacteria. The first-line recommended treatment for bacterial vaginosis is the antibiotic metronidazole, which has excellent activity against a broad range of anaerobic bacteria. It can be administered either orally (e.g., 500 mg twice daily for 7 days) or as an intravaginal gel. Clindamycin (A) is an effective alternative treatment. 179. What is the most likely diagnosis based on the provided image? (A) Vulval hematoma (B) Condyloma acuminata (C) Vulval cancer (D) Bartholin cyst

Question 88. What should be done for a newly diagnosed HIV patient who presents with fever, cough, and hemoptysis, and whose sputum sample shows acid-fast bacilli?

A. Start ART if CD4 <200

B. Start ART and then ATT after 2 weeks

C. Start ATT and then ART after 2 weeks

D. Start ATT and ART simultaneously

Correct answer: C

Start ATT and then ART after 2 weeks The patient has a new diagnosis of HIV with a concurrent opportunistic infection, active pulmonary tuberculosis (TB), confirmed by the presence of acid-fast bacilli in the sputum. According to WHO and other international guidelines, in patients with HIV and TB co-infection, treatment for tuberculosis must be prioritized. The recommended

course of action is to start anti-tubercular therapy (ATT) immediately. Antiretroviral therapy (ART) should then be initiated shortly thereafter. The optimal timing is to start ART within 2 to 8 weeks of starting ATT. Starting ART too early, especially in patients with very low CD4 counts, can increase the risk of Immune Reconstitution Inflammatory Syndrome (IRIS), where a rapid recovery of the immune system can lead to a paradoxical worsening of the TB symptoms. Starting ATT first reduces the mycobacterial load, decreasing the risk of severe IRIS.

Question 89. A 68-year-old man with hypertension, diabetes, and coronary artery disease presents with palpitations and shortness of breath. His heartbeat is irregular, and ECG shows an irregular rhythm with no P waves and no isoelectric baseline. His vitals are BP 132/84 mmHg, HR 130 bpm, and SpO_2 94% on room air. Based on these findings, which treatment should be considered the first-line option for this patient?

A. Amiodarone

B. Metoprolol

C. Electrical cardioversion

D. Direct oral anticoagulant (DOAC) therapy

Correct answer: B

Metoprolol The patient's ECG findings—an irregularly irregular rhythm with no discernible P waves—are diagnostic of atrial fibrillation. The heart rate of 130 bpm indicates a rapid ventricular response (RVR). Since the patient is hemodynamically stable (BP 132/84), the immediate goal of management is rate control, not rhythm control. The first-line agents for rate control in atrial fibrillation are either beta-blockers (like metoprolol) or non-dihydropyridine calcium channel blockers (like diltiazem). These drugs slow conduction through the AV node, thereby reducing the ventricular rate and improving symptoms. Electrical cardioversion (C) is reserved for unstable patients. Amiodarone (A) is typically a second-line agent for rate or rhythm control. Anticoagulation (D) is essential for long-term stroke prevention but is not the first-line intervention for acute rate control.

Question 90. Which of the following is not regarded as a primary diagnostic criterion for neuromyelitis optica?

A. Area postrema syndrome

B. Acute myelitis

C. Focal epilepsy

D. Optic neuritis

Correct answer: C

Focal epilepsy Neuromyelitis Optica Spectrum Disorder (NMOSD) is an autoimmune inflammatory disorder of the central nervous system, primarily targeting astrocytes. The diagnosis is based on a set of core clinical characteristics. The cardinal features are attacks of

optic neuritis (D) (inflammation of the optic nerve causing vision loss) and acute myelitis (B) (inflammation of the spinal cord, typically a longitudinally extensive transverse myelitis affecting three or more vertebral segments). Another core characteristic is the area postrema syndrome (A), which presents with intractable nausea, vomiting, and hiccups due to lesions in the brainstem's area postrema. These three are key diagnostic criteria for NMOSD. Focal epilepsy (C), while a neurological symptom, is not a characteristic or core diagnostic feature of NMOSD. The pathology of NMOSD primarily affects the optic nerves, spinal cord, and brainstem, not typically the cerebral cortex in a way that would cause epilepsy.

Question 91. Which of the following does not show hypokinesia movements?

A. Parkinson's disease

B. Apraxia

C. Catatonia

D. Chorea

Correct answer: D

Chorea Hypokinesia refers to a poverty of movement, characterized by slowness (bradykinesia) and reduced amplitude and frequency of voluntary movements. Parkinson's disease (A) is the archetypal hypokinetic movement disorder. Catatonia (C) can present with profound hypokinesia, immobility, and posturing. Apraxia (B) is a disorder of motor planning, not movement initiation itself, but can result in a significant lack of spontaneous movement, appearing as hypokinesia. In contrast, chorea is a hyperkinetic movement disorder. It is characterized by involuntary, continuous, irregular, and non-repetitive flowing or "dance-like" movements that flit from one body part to another. It represents an excess of movement, the opposite of hypokinesia. Huntington's disease is a classic cause of chorea.

Question 92. Which of the following conditions are associated with hypertension and hypokalemic metabolic alkalosis?

A. Bartter syndrome

B. Liddle syndrome

C. Gitelman syndrome

D. Gordon syndrome

Correct answer: B

Liddle syndrome This clinical picture describes a state of apparent mineralocorticoid excess. Liddle syndrome is a rare, autosomal dominant genetic disorder that perfectly fits this description. It is caused by a gain-of-function mutation in the epithelial sodium channel (ENaC) in the collecting ducts of the kidneys. This mutation leads to excessive and unregulated reabsorption of sodium and, consequently, water. This volume expansion causes severe hypertension. The increased sodium reabsorption also creates a negative electrical potential in the tubular lumen, which drives the excessive secretion of potassium and hydrogen ions,

resulting in hypokalemia and metabolic alkalosis. A key feature is that aldosterone and renin levels are suppressed. Bartter (A) and Gitelman (C) syndromes are salt-wasting tubulopathies that cause hypokalemia but with normal or low blood pressure. Gordon syndrome (D) causes hypertension but with hyperkalemia.

Question 93. Which of the following statements regarding electroencephalogram (EEG) is not correct?

A. 1-5% of the population can have epileptiform discharges

B. Doing EEG is mandatory for diagnosis of seizures

C. Scalp EEG may be helpful in localizing frontal lobe epilepsy

D. Progressive multifocal leukoencephalopathy shows triphasic and slow waves on EEG

Correct answer: B

Doing EEG is mandatory for diagnosis of seizures This statement is not correct. The diagnosis of epilepsy and seizures is primarily a clinical diagnosis, based on a thorough history and eyewitness accounts of the events. An electroencephalogram (EEG) is a crucial investigative tool that provides supportive evidence. It can help classify the seizure type, identify an epileptogenic focus, and guide treatment, but it is not mandatory for diagnosis. A patient can have a definitive clinical diagnosis of epilepsy even if their interictal (between seizures) EEG is normal. Conversely, a small percentage of the healthy population (A) can have incidental epileptiform discharges on their EEG without ever having a seizure. EEG is helpful in localizing certain epilepsies (C), and various encephalopathies can show specific patterns like slow or triphasic waves (D). But the diagnosis of a seizure remains fundamentally clinical.

Question 94. Which jugular venous pressure (JVP) wave corresponds to the isovolumetric contraction phase of the cardiac cycle?

A. A wave

B. C wave

C. X descent

D. Y descent

Correct answer: B

C wave The jugular venous pressure (JVP) waveform reflects pressure changes in the right atrium. The 'a' wave (A) is caused by atrial contraction. The 'c' wave is a small positive wave that occurs during early ventricular systole. It is thought to be caused by the bulging of the tricuspid valve back into the right atrium as it closes at the beginning of isovolumetric ventricular contraction. It can also have a component from the transmitted carotid artery pulsation. The 'x' descent (C) is the fall in atrial pressure caused by atrial relaxation and the downward pulling of the tricuspid valve during ventricular systole. The 'v' wave is caused by atrial filling against a closed tricuspid valve. The 'y' descent (D) is the fall in atrial pressure when the tricuspid valve opens and the ventricle begins to fill. Therefore, the c wave

corresponds to the isovolumetric contraction phase.

Question 95. A 22-year-old male arrives at the emergency department after a car accident. His Glasgow Coma Scale (GCS) score is E2M2V3. There are no fractures, no signs of hydrocephalus or raised intracranial pressure, and his non-contrast CT scan is normal. What is the most likely diagnosis?

A. Diffuse axonal injury

B. Post-concussion syndrome

C. Extradural hemorrhage

D. Herniation of brain

Correct answer: A

Diffuse axonal injury The patient has a severe traumatic brain injury, as indicated by his Glasgow Coma Scale (GCS) score. The total score is E2 (opens eyes to pain) + M2 (extends to pain) + V3 (inappropriate words) = 7. A GCS of 3-8 defines a severe TBI. The key feature of the case is the profound neurological impairment in the face of a normal initial non-contrast CT scan. This discrepancy is the hallmark of diffuse axonal injury (DAI). DAI is caused by shearing forces from the trauma that lead to widespread microscopic damage to axons, which is not visible on a standard CT scan. Macroscopic injuries like an extradural hemorrhage (C) or signs of herniation (D) would be readily apparent on CT. Post-concussion syndrome (B) describes persistent symptoms after a mild TBI, which is inconsistent with a GCS of 7.

Question 96. A 26-year-old man presents with a large, painless, firm swelling in the right testicle and a dragging sensation. The left testicle is normal, and his AFP level is around 3000 U. What is the most appropriate next step in management?

A. FNAC (Fine needle aspiration cytology)

B. Scrotal trucut biopsy

C. High inguinal orchidectomy

D. Repeat tumor markers

Correct answer: C

High inguinal orchidectomy A painless, firm testicular mass in a young man is considered a testicular cancer until proven otherwise. The markedly elevated alpha-fetoprotein (AFP) level confirms the presence of a non-seminomatous germ cell tumor (NSGCT), as seminomas do not produce AFP. The standard and essential next step in management is a radical high inguinal orchidectomy. This procedure involves removing the entire testicle and spermatic cord through an incision in the groin. It is both diagnostic (providing the entire specimen for histology) and therapeutic (removing the primary tumor). A trans-scrotal approach, such as an FNAC (A) or trucut biopsy (B), is absolutely contraindicated. This is because it violates the scrotal lymphatic drainage, which is distinct from the testicular lymphatic drainage (to the retroperitoneal nodes), and can lead to scrotal seeding and altered patterns of metastasis, complicating subsequent

treatment.

Question 97. What is the most frequent reason for hospital admission following daycare surgery?

A. Postoperative nausea and vomiting

B. Respiratory distress

C. Post-surgical pain

D. Bleeding

Correct answer: A

Postoperative nausea and vomiting Daycare surgery, or ambulatory surgery, relies on the patient being able to recover safely and comfortably at home. One of the most common and distressing side effects that can prevent a timely discharge or lead to an unplanned hospital admission is intractable postoperative nausea and vomiting (PONV). While post-surgical pain (C) is also very common, it can often be managed with oral analgesics. However, persistent nausea and vomiting can lead to dehydration, electrolyte disturbances, and an inability to tolerate oral fluids or medications, necessitating admission for intravenous hydration and antiemetic therapy. While bleeding (D) and respiratory distress (B) are more serious complications, they are much less frequent causes of admission than poorly controlled PONV. For this reason, significant effort is made to assess PONV risk and provide prophylactic antiemetics in the daycare setting.

Question 98. A 20-year-old male is brought to the emergency department after a bicycle accident. He is hemodynamically stable but has a perineal bruise, cannot urinate, and has blood at the urethral meatus. The bladder is not palpable. What is the most appropriate management for this patient?

A. Wait and send him home

B. Immediate insertion of Foley's catheter

C. Suprapubic aspiration of urine NODIA page 611 INICET Examination Paper

D. Wait for bladder to fill and urge to urinate

Correct answer: C

Suprapubic aspiration of urine This patient's presentation—a straddle injury (bicycle accident), perineal hematoma, blood at the meatus, and inability to void—forms the classic triad for an anterior urethral injury. In this situation, attempting to blindly insert a Foley's catheter (B) is contraindicated, as it can convert a partial urethral tear into a complete one and create a false passage. The immediate priority is to decompress the bladder. The safest and most appropriate method for this is suprapubic catheterization. This can be done via aspiration with a needle initially (C), but is more definitively managed by the placement of a suprapubic cystostomy tube, which diverts urine directly from the bladder, bypassing the injured urethra entirely. Once the patient is stabilized, a retrograde urethrogram will be performed to delineate the injury and

plan for definitive repair.

Question 99. A man suffers a stab injury to the arm, leading to a hematoma and absent radial and ulnar pulses. Examination reveals a 3.5 cm longitudinal tear in the brachial artery. What is the most appropriate treatment for this injury?

A. Primary repair with end-to-end anastomosis

B. Repair with great saphenous vein graft

C. Repair with prosthetic graft

D. Repair with saphenous vein patch

Correct answer: B

Repair with great saphenous vein graft The patient has a significant traumatic injury to the brachial artery, resulting in ischemia of the forearm (absent distal pulses). A simple longitudinal tear of 3.5 cm is too long for a tension-free primary repair with end-to-end anastomosis (A), which is only feasible for very short, clean transections. In this situation, the damaged segment of the artery must be debrided and bypassed. The gold standard material for repairing an arterial injury of this size in an extremity is an autologous reversed saphenous vein graft (B). The great saphenous vein is readily available, has a suitable diameter, is resistant to infection, and has excellent long-term patency. A prosthetic graft (C) (e.g., PTFE) has a higher risk of infection, especially in a trauma setting, and thrombosis. A vein patch (D) is used to widen an artery (angioplasty), not to bridge a long gap.

Question 100. Which of the following statements are true about colon cancer? 1. Right and left colon cancers can behave differently 2. Colon cancers can be hereditary 3. Colon cancer risk can be reduced by metformin 4. Colon cancers frequently metastasize to the liver

A. 1,2 and 3

B. 2,3 and 4

C. 2 and 4 only

D. 1,2,3 and 4

Correct answer: D

1,2,3 and 4 All four statements are true. 1. Right-sided and left-sided colon cancers are increasingly recognized as distinct entities. Right-sided cancers often present with anemia and are more likely to have microsatellite instability, while left-sided cancers are more likely to be chromosomal instability pathway tumors and present with obstructive symptoms. 2. While most colon cancers are sporadic, a significant proportion (5-10%) are hereditary, caused by inherited mutations in genes associated with syndromes like Lynch syndrome (HNPCC) and Familial Adenomatous Polyposis (FAP). 3. Epidemiological and clinical studies have shown that the use of metformin in diabetic patients is associated with a reduced risk of developing several cancers, including colorectal cancer, and may improve outcomes in patients with the disease. 4.

The colon's venous drainage is via the portal system. Therefore, the liver is the most common site of distant metastasis for colorectal cancer.

Question 101. During surgery for breast carcinoma, a frozen section technique was used. This method offers several advantages, except in which of the following situations?

A. Determining the status of the sentinel lymph node

B. To know margin positivity

C. Identifying metastasis

D. To confirm definitive diagnosis immediately in all cases

Correct answer: D

To confirm definitive diagnosis immediately in all cases Frozen section is an invaluable intraoperative tool. It allows for rapid microscopic analysis of a tissue sample while the patient is still under anesthesia. It is routinely used to determine the status of the sentinel lymph node (A), which helps guide the decision on whether to proceed with an axillary lymph node dissection. It is also used to assess surgical margins (B) to ensure the tumor has been completely excised. It can also identify unexpected metastasis (C). However, its major limitation is that the tissue quality is inferior to that of permanent, formalin-fixed sections. For certain challenging cases, such as differentiating ductal carcinoma in situ (DCIS) from atypical ductal hyperplasia, or in some types of lobular carcinoma, a frozen section may not be able to provide a definitive diagnosis immediately in all cases (D). In such situations, the pathologist will defer the final diagnosis to the permanent sections.

Question 102. Which of the following statements about hepatocellular carcinoma (HCC) is/are correct? 1. TACE is used for multinodular lesions Click Here to Buy book on Amazon MEDINK 2. Lenvatinib is used for lesions less than 3 cm 3. The incidence of HCC is increasing 4. NASH and NAFLD are risk factors for HCC (TACE : Transarterial chemoembolization)

A. 1,2,3

B. 2,3,4

C. 1,3,4

D. 1 and 2

Correct answer: C

1,3,4 1. Correct. Transarterial chemoembolization (TACE) is a primary treatment modality for patients with intermediate-stage HCC, which is typically defined as large or multinodular tumors confined to the liver, in patients with preserved liver function who are not candidates for curative therapies. 2. Incorrect. Lenvatinib is a systemic tyrosine kinase inhibitor used to treat advanced or unresectable HCC, not small, early-stage lesions. Lesions less than 3 cm would be candidates for curative treatments like resection, ablation, or transplantation. 3. Correct. The

global incidence of HCC is increasing, largely driven by the rising prevalence of its risk factors, particularly Hepatitis C, and now increasingly, non-alcoholic fatty liver disease. 4. Correct. While chronic viral hepatitis (B and C) and alcoholic liver disease are the most common risk factors worldwide, Non-alcoholic fatty liver disease (NAFLD) and its inflammatory form, non-alcoholic steatohepatitis (NASH), are rapidly emerging as leading causes of cirrhosis and subsequent HCC, especially in Western countries.

Question 103. A patient arrives at the emergency department after a road traffic accident with a 4 × 1 cm bone-deep lacerated wound on the scalp of the forehead. What is the most likely mechanism responsible for this type of laceration?

A. Shearing force

B. Impact of a semi-sharp edged object

C. Overstretching of skin and subcutaneous tissue

D. Tissue crushed between weapon and underlying bone

Correct answer: D

Tissue crushed between weapon and underlying bone A laceration is a tear or split in the skin and underlying tissues caused by blunt force trauma, as opposed to an incised wound from a sharp object. On the scalp and forehead, the skin is relatively thin and stretched tautly over the underlying rigid skull. When a blunt object impacts this area, the soft tissue is momentarily and forcefully compressed and crushed between the impacting object and the underlying bone. This crushing force exceeds the elastic capacity of the skin, causing it to split open, creating a laceration. These lacerations often have irregular, bruised edges and may have "tissue bridges" of intact nerves or vessels crossing the wound depths, which are characteristic of a blunt force mechanism.

Question 104. What is the primary reason for bladder outlet obstruction in male children?

A. Posterior urethral valve

B. Urethral atresia

C. Anterior urethral valve

D. Ureterocele

Correct answer: A

Posterior urethral valve The most common cause of significant bladder outlet obstruction in male infants and children is the presence of posterior urethral valves (PUV). PUV is a congenital condition where obstructing leaflets or membranes of tissue are present in the posterior (prostatic) urethra. These valves act as a one-way flap, impeding the outflow of urine from the bladder. This obstruction can be severe, leading to high pressure within the bladder, bilateral hydroureteronephrosis (dilation of the ureters and kidneys), and progressive renal damage, even in utero. It is a serious condition that requires prompt diagnosis and surgical intervention

(valve ablation). Anterior urethral valves (C) are much rarer. Urethral atresia (B) is incompatible with life unless a urinary diversion is present. A ureterocele (D) can cause obstruction but typically at the ureterovesical junction.

Question 105. Which of the following components make up kangaroo mother care?

A. Early discharge, skin-to-skin contact, prevent infection

B. Early discharge, skin-to-skin contact, exclusive breastfeeding

C. Skin-to-skin contact, exclusive breastfeeding, prevent infection

D. Early discharge, exclusive breastfeeding and prevent infection

Correct answer: B

Early discharge, skin-to-skin contact, exclusive breastfeeding Kangaroo Mother Care (KMC) is a comprehensive, low-cost intervention for the care of low-birth-weight and preterm infants, particularly in resource-limited settings. The core and essential components of KMC are : Continuous skin-to-skin contact between the mother (or another caregiver) and the infant. The baby is placed in an upright position on the mother's bare chest. Exclusive breastfeeding (or exclusive human milk feeding). Skin-to-skin contact facilitates frequent and successful breast feeding. These two components are central to the practice. KMC has been shown to improve thermal regulation, reduce infections, and promote growth, which in turn facilitates early discharge from the hospital. Therefore, while preventing infection is a result of KMC, the primary components are skin-to-skin contact, exclusive breast feeding, and the enabling of early discharge. page 615 INICET Examination Paper (B) Re-apply cast (C) Measure anterior compartment pressure (D) Analgesics AAns (C) Measure anterior compartment pressure This is a duplicate of a previous question. The clinical findings are classic for acute compartment syndrome. The severe pain, especially pain on passive stretch of the toe extensors, is the most sensitive early sign. The loss of sensation in the first web space indicates dysfunction of the deep peroneal nerve, which lies in the anterior compartment, and is another critical finding. The presence of distal pulses is not a reliable sign to rule out compartment syndrome, as pulses are often lost only in the late stages. The immediate and most appropriate next action is to confirm the clinical suspicion by objectively measuring the pressure within the anterior compartment. A high pressure confirms the diagnosis and mandates an emergency fasciotomy to prevent irreversible ischemic damage to the muscles and nerves within the compartment. Delaying diagnosis by pursuing other investigations or providing only analgesics can lead to devastating consequences, including limb loss.

Question 106. What is the most likely reason for changing treatment from ampicillin to ceftriaxone in a 14-month-old child with Haemophilus influenzae meningitis?

A. Haemophilus alters penicillin-binding protein sites, hence resistant to ampicillin

B. Easier to administer IV ceftriaxone than IV ampicillin

C. Cotrimoxazole is the drug of choice, but patient is allergic to sulfa drugs

D. Haemophilus produces beta-lactamase, hence resistant to ampicillin

Correct answer: D

Hemophilus produces beta-lactamase, hence resistant to ampicillin The most common mechanism of resistance to ampicillin in Hemophilus influenzae is the production of the enzyme beta-lactamase. This enzyme hydrolyzes the beta-lactam ring of penicillin-class antibiotics like ampicillin, inactivating the drug. A significant proportion of H. influenzae strains, including those causing invasive diseases like meningitis, are beta-lactamase positive. For this reason, ampicillin is no longer recommended as a sole empirical therapy for serious H. influenzae infections. Third-generation cephalosporins, such as ceftriaxone, are stable in the presence of these beta-lactamases and have excellent penetration into the cerebrospinal fluid, making them the drug of choice for treating H. influenzae meningitis. Alteration of penicillin-binding proteins (A) is a mechanism of resistance seen in Streptococcus pneumoniae.

Question 107. Match the following developmental milestones : 1. Transfers objects a. 1-2 months 2. Social smile b. 6-7 months 3. Pincer grasp c. 12-15 months 4. Walks 1-2 steps d. 9-12 months

A. 1-a, 2-b, 3-c, 4-d

B. 1-b, 2-a, 3-d, 4-c

C. 1-c, 2-b, 3-a, 4-d

D. 1-d, 2-c, 3-b, 4-a

Correct answer: B

1-b, 2-a, 3-d, 4-c This question matches key developmental milestones with their typical age of achievement. 2. Social smile : This is one of the earliest social milestones, where an infant smiles purposefully in response to a caregiver. It typically emerges between 1-2 months of age (a). 1. Transfers objects : The ability to pass an object from one hand to the other is a fine motor milestone that develops around 6-7 months (b). 3. Pincer grasp : The development of a fine pincer grasp, using the tips of the thumb and index finger to pick up small objects, typically matures between 9-12 months (d). 4. Walks 1-2 steps : The milestone of taking independent steps and walking usually occurs in the range of 12-15 months (c), although the normal range is wide. The correct matching sequence is therefore 1-b, 2-a, 3-d, 4-c.

Question 108. Which of the following statements are true about open fractures? 1. Tibia and phalanges are most commonly involved 2. Usually no co-existing injuries 3. Compartment syndrome does not occur in open fractures 4. Early debridement should be done

A. 1 and 2

B. 1 and 4

C. 2 and 4

D. 2 and 3

Correct answer: B

1 and 4 1. True. The bones most frequently involved in open fractures are those with minimal soft tissue coverage, making them more vulnerable to being exposed after injury. The tibia (shin bone) and the phalanges of the fingers and toes are the most common sites. 2. False. Open fractures are often the result of high-energy trauma. Therefore, they are frequently associated with significant co-existing injuries to other body systems, which must be assessed as part of the initial trauma evaluation. 3. False. This is a dangerous misconception. Compartment syndrome can and does occur in open fractures. Although the break in the skin may allow some pressure to be released, the underlying fascial compartments can still be intact, and significant bleeding or swelling within a compartment can raise the pressure to a critical level, compromising perfusion. 4. True. A cornerstone of open fracture management is prompt surgical intervention. Early and thorough irrigation and debridement of the wound is essential to remove all contaminated and devitalized tissue to minimize the high risk of infection.

Question 109. Match the following fractures with their corresponding locations. a. Jones fracture 1. 5th metatarsal b. Bennett's fracture 2. 2nd metatarsal Click Here to Buy book on Amazon MEDINK 164. Which of the following is not a part of the quadruple screening test?

A. Inhibin B

B. Unconjugated Estriol (E3)

C. AFP

D. hCG

Correct answer: A

Inhibin B The quadruple screen, or "quad test," is a maternal serum screening test performed during the second trimester of pregnancy (typically between 15 and 22 weeks) to assess the risk for certain fetal chromosomal abnormalities and neural tube defects. The test measures the levels of four specific substances in the mother's blood : 1. Alpha-fetoprotein (AFP) (C) 2. Human chorionic gonadotropin (hCG) (D) 3. Unconjugated estriol (uE3) (B) 4. Inhibin A These four markers are analyzed together with maternal age to calculate a risk score for Down syndrome (Trisomy 21), Trisomy 18, and open neural tube defects. Inhibin B (A) is a different hormone that is primarily used as a marker of ovarian reserve and granulosa cell function in females or Sertoli cell function in males; it is not a component of the quadruple screening test. 165. Which fixative is employed for a Pap smear? (A) Formalin (B) Air dried (C) Normal saline (D) 95% ethanol AAns (D) 95% ethanol For a conventional Papanicolaou (Pap) smear, proper and immediate fixation of the cervical cells on the glass slide is absolutely critical to preserve cellular morphology and prevent air-drying artifacts, which can render the specimen uninterpretable. The gold standard and most widely used fixative is 95% ethanol. The slide

should be immersed in the ethanol solution or sprayed with a commercially available cytology spray fixative (which has an ethanol base) immediately after the sample is smeared. This wet-fixation process preserves the fine nuclear and cytoplasmic details necessary for accurate cytological diagnosis. Formalin (A) is the standard fixative for tissue biopsies (histology), not for cytology smears. Air drying (B) is used for hematology smears (e.g., peripheral blood) but causes significant distortion in Pap smears. Normal saline (C) is not a fixative. 166. What is considered the optimal percentage of normal sperm morphology in a semen analysis? (A) 10% (B) 4% (C) 6% (D) 8% AAns (B) 4% According to the most recent World Health Organization (WHO) guidelines for the examination and processing of human semen (5th and 6th editions), the lower reference limit for normal sperm morphology is 4%. This evaluation is performed using strict criteria, known as the Kruger's strict criteria, which assess the size and shape of the sperm head, midpiece, and tail. A semen sample is considered to have normal morphology if 4% or more of the observed spermatozoa have a normal form. A value below 4% is defined as teratozoospermia. This relatively low threshold reflects the high degree of morphological variability in human sperm and the stringent criteria used for classification. The older WHO editions used higher cut-off values, but the current standard is 4%. 167. What is the most likely diagnosis in an 18-year- old girl who has amenorrhea, normal genitalia and breast development, and tests positive for 5-alpha-reductase deficiency? (A) Mullerian agenesis (B) Concealed sex (C) AIS (Androgen Insensitivity Syndrome) (D) Turner's syndrome AAns (B) Concealed sex. Let's break down the clinical picture to arrive at the diagnosis : 1. Patient Profile : An 18-year-old who appears female, with normal breast development and female external genitalia, but has never had a menstrual period (primary amenorrhea). 2. Key Lab Test : She tests positive for 5-alpha-reductase deficiency. 5-alpha-reductase is a crucial enzyme that converts testosterone into the much more potent dihydrotestosterone (DHT). DHT is essential for the development of male external genitalia during fetal development. In an individual with a 46,XY (male) karyotype and 5-alpha-reductase deficiency : 1. In Utero : The lack of DHT means the external genitalia do not masculinize, leading to the development of female-appearing external genitalia. These individuals are typically assigned female at birth and raised as girls. 2. Internal Organs : They have testes (which may be undescended) that produce Anti-Müllerian Hormone, so they do not develop a uterus or fallopian tubes. This is why the patient has amenorrhea. 3. At Puberty : The testes produce a surge of testosterone. This testosterone can be converted into estrogen, leading to the development of female breasts. This entire scenario creates a discordance between the individual's genetic sex (male, XY) and their external physical appearance (female). This condition is what is being referred to by the somewhat outdated term "Concealed sex", as the male genetic identity is hidden by a female phenotype. Why Other Options Are Incorrect (A) Mullerian agenesis : This affects 46,XX (female) individuals who are born without a uterus. They have normal ovaries and develop breasts, but have amenorrhea. This diagnosis is inconsistent with a 5-alpha-reductase deficiency, which affects

46,XY individuals. (C) AIS (Androgen Insensitivity Syndrome) : This is also a condition in 46,XY individuals who appear female. However, the cause is a defect in androgen receptors, meaning their body cannot respond to testosterone or DHT. While the physical presentation is very similar, the specific diagnosis of 5-alpha-reductase deficiency rules out AIS. (D) Turner's syndrome : This is caused by a 45,X0 karyotype. These individuals are female but have non-functional ovaries, leading to a lack of estrogen and failure to develop breasts without hormone therapy. This does not match the patient's presentation. 168. A 32-year-old pregnant woman with monochorionic diamniotic twins shows polyhydramnios in one twin and oligohydramnios in the other on an ultrasound. What is the most likely complication indicated by these findings? (A) Selective fetal growth restriction (B) Preterm labor (C) Twin to twin transfusion syndrome (D) Neural tube defects AAns (C) Twin to twin transfusion syndrome The ultrasound finding of polyhydramnios (excess amniotic fluid) in one twin and oligohydramnios (deficient amniotic fluid) in the other twin in a monochorionic pregnancy (twins sharing a single placenta) is the pathognomonic sign of Twin-to-Twin Transfusion Syndrome (TTTS). This serious complication arises due to unbalanced blood flow through inter-twin vascular anastomoses on the shared placental surface. One twin, the "donor," transfuses blood to the other, the "recipient." The donor twin becomes anemic and hypovolemic, leading to poor renal perfusion and oligohydramnios. The recipient twin becomes hypervolemic and polycythemic, leading to cardiac strain and polyuria, which results in polyhydramnios. This combination of oligohydramnios in the donor and polyhydramnios in the recipient is the defining feature of TTTS. 169. Please match the following disorders that cause secondary amenorrhea with their corresponding laboratory findings. Condition Lab markers 1. Sheehan's syndrome a. Normal LH, Normal FSH, Normal estra- diol 2. Premature Ovarian Failure b. High LH, Low FSH, Normal estradiol 3. PCOS (Polycystic Ovary Syndrome) c. Low LH, Low FSH, Low es- tradiol 4. Asherman's syn- drome d. High LH, High FSH, Low es- tradiol (A) 1-c, 2-d, 3-b, 4-a (B) 1-d, 2-b, 3-c, 4-a (C) 1-c, 2-b, 3-d, 4-a (D) 1-a, 2-b, 3-d, 4-c AAns (A) 1-c, 2-d, 3-b, 4-a 1. Sheehan's syndrome : This is hypopituitarism from postpartum pituitary necrosis. The pituitary cannot produce gonadotropins, resulting in low LH, low FSH, and consequently low estradiol (c). This is hypogonadotropic hypogonadism. 2. Premature Ovarian Failure (POF) : The ovaries fail and do not produce estradiol. The lack of negative feedback from estradiol causes the pituitary to secrete excessive gonadotropins, resulting in high LH, high FSH, and low estradiol (d). This is hypergonadotropic hypogonadism. 3. PCOS : This condition is characterized by hypothalamic-pituitary-ovarian axis dysregulation, typically leading to a high LH to FSH ratio (high LH, relatively low or normal FSH), with normal or slightly elevated estradiol levels due to peripheral conversion of androgens (b). 4. Asherman's syndrome : This is an outflow tract problem due to intrauterine adhesions. The HPO axis is functioning normally. Therefore, LH, FSH, and estradiol levels will be normal (a). 170. Which diagnostic test is used to identify a unicornuate uterus among the following options? 1. Falloposcopy 2. Laparoscopy 3. HSG

(Hysterosalpingography) 4. X-ray (A) 2,4 (B) 1,2 (C) 1,3 (D) 2,3 AAns (D) 2,3 A unicornuate uterus is a type of Mullerian duct anomaly where only one horn of the uterus develops. 3. Hysterosalpingography (HSG) : This is an X-ray procedure where contrast dye is injected into the uterus. In a unicornuate uterus, the HSG will outline a single, often "banana-shaped" uterine cavity that is connected to only one fallopian tube. It is an excellent screening test for the internal uterine anatomy. 2. Laparoscopy : This is a surgical procedure that allows direct visualization of the external surface of the uterus and pelvic organs. It is considered the gold standard for confirming the diagnosis, as it can definitively show the presence of only one uterine horn and can also identify a rudimentary horn if one is present. 1. Falloposcopy is used to visualize the inside of the fallopian tubes. A plain X-ray (4) cannot visualize the uterus. 3D ultrasound and MRI are also excellent non-invasive methods, but of the choices given, HSG and laparoscopy are the key diagnostic tests. 171. Please match the following colors of STI kits with their corresponding use : a. Lower abdominal pain 1. Grey, Kit 1 b. Urethral discharge 2. Green, Kit 2 c. Non herpetic genital ulcer 3. White, Kit 3 d. Vaginal discharge 4. Yellow, Kit 6 (A) a-4, b-3, c-2, d-1 (B) a-4, b-1, c-3, d-2 (C) a-1, B-4, C-3, d-2 (D) a-3, b-2, c-4, d-1 AAns (B) a-4, b-1, c-3, d-2 Under India's National AIDS Control Organisation (NACO), syndromic management of sexually transmitted infections (STIs) is promoted using pre-packaged, color-coded kits. The matching is as follows : 1. Kit 1 (Grey) : Used for the treatment of urethral discharge, cervicitis, and anorectal discharge (b). 2. Kit 2 (Green) : Used for the treatment of vaginal discharge (vaginitis and cervicitis) (d). 3. Kit 3 (White) : Used for the treatment of non-herpetic genital ulcers (e.g., syphilis, chancroid) (c). There are variations (Kit 4-Blue for non-herpetic, Kit 5-Red for herpetic). Let's assume this refers to the general ulcer kit. 4. Kit 6 (Yellow) : Used for the treatment of lower abdominal pain, which is the syndrome for Pelvic Inflammatory Disease (PID) (a). The correct sequence of matches is therefore a-4, b-1, c-3, d-2.

Question 110. Please match the following fractures with their corresponding locations. a. Jones fracture 1. 5th metatarsal b. Bennett's fracture 2. 2nd metatarsal c. March fracture 3. 1st metacarpal d. Boxer fracture 4. 5th metacarpal

A. a-1, b-3, c-2, d-4

B. a-2, b-3, c-1, d-4

C. a-4, b-2, c-4, d-3

D. a-2, b-4, c-1, d-3

Correct answer: A

a-1, b-3, c-2, d-4 This is a duplicate of the previous question. To reiterate the definitions, these fractures have specific anatomical locations. The Jones fracture (a) specifically affects the proximal 5th metatarsal (1). The Bennett's fracture (b) is an oblique, intra-articular fracture occurring at the base of the 1st metacarpal (3). The March fracture (c) is a fatigue fracture, most often seen in the shaft of the 2nd metatarsal (2), caused by repetitive stress from

activities like prolonged walking or running. Lastly, the Boxer fracture (d) is a common injury resulting from a direct blow with a clenched fist, causing a fracture at the neck of the 5th metacarpal (4). Correctly pairing these eponymous fractures with their respective bones yields the combination a-1, b-3, c-2, d-4, confirming the correct answer choice.

Question 111. Arrange the steps for performing the Thomas Test—used to evaluate a hip flexion deformity— in the correct order. 1. Squaring of the pelvis 2. Flexion of the hip 3. Look for exaggerated lumbar lordosis 4. Measure the actual flexion deformity 5. Ensure the ischial tuberosity makes contact with the ground 6. Overcorrect the normal side

A. 1, 2, 3, 4, 5

B. 3, 2, 1, 4, 6

C. 3, 2, 6, 5, 4

D. 3, 6, 2, 5, 4

Correct answer: C

3, 2, 6, 5, 4 The Thomas test is used to assess fixed flexion deformity of the hip. Correct sequence: 3. Look for exaggerated lumbar lordosis : The patient lies supine. First observe for increased lumbar lordosis, which suggests a possible hip flexion deformity. 2. Flexion of the hip : Flex the normal (unaffected) hip to flatten the lumbar spine and eliminate lumbar lordosis. 6. Overcorrect the normal side : Further flex the normal hip until the pelvis begins to rotate, ensuring complete correction of pelvic tilt. 5. Ensure the ischial tuberosity makes contact with the ground : Confirm that the pelvis is stabilized and the lumbar spine is flat against the table (pelvis “squared”). 4. Measure the actual flexion deformity : The angle between the affected thigh and the table is then measured—this represents the fixed flexion deformity. Thus, the correct order is : 3 → 2 → 6 → 5 → 4, which corresponds to Option (C).

Question 112. A 60-year-old woman with a Colles’ fracture 8 months ago, a T-score of –2.5, menopause at age 52, and no current symptoms attends the orthopedics clinic. What is the most appropriate treatment for her?

A. Hormone replacement therapy

B. Alendronate

C. Calcium and vitamin D

D. Repeat DEXA scan after 3 months

Correct answer: B

Alendronate This patient has a definitive diagnosis of severe osteoporosis and is at high risk for future fractures. The diagnosis is established by two key findings : first, a DEXA scan T-score of -2.5 or lower is the densitometric definition of osteoporosis. Second, she has already sustained a fragility fracture (a Colles' fracture from a low-impact fall), which is a clinical diagnosis of severe osteoporosis regardless of the T-score. Given her high risk, pharmacological intervention

is mandatory. The first-line treatment for postmenopausal osteoporosis is a bisphosphonate, such as alendronate. These drugs are anti-resorptive agents that inhibit osteoclast activity, increase bone mineral density, and have been proven to significantly reduce the risk of vertebral and non-vertebral fractures. While calcium and vitamin D supplementation (C) is essential for all patients with osteoporosis, it is not sufficient as a standalone treatment. Repeating the DEXA scan (D) would unnecessarily delay essential treatment. Hormone replacement therapy (A) is not a first-line option.

Question 113. A 45-year-old patient comes to the emergency department with severe pain in a casted tibial fracture. After the cast is removed, examination reveals painful passive extension, intact dorsalis pedis and posterior tibial pulses, and loss of sensation over the first web space. What is the most appropriate next step in management?

A. Duplex imaging

B. Re-apply cast

C. Measure anterior compartment pressure

D. Analgesics

Correct answer: C

Measure anterior compartment pressure This patient's clinical presentation is highly suggestive of acute compartment syndrome of the leg, an orthopedic emergency. The "5 P's" are classic, but the most reliable and earliest signs are present here : Pain out of proportion to the injury, which is not relieved by analgesics, and Pain on passive stretch of the muscles in the affected compartment. The sensory loss in the first web space indicates compression of the deep peroneal nerve, which runs through the anterior compartment. This Paresthesia is another key early sign. Pulses often remain intact until very late, so their presence is not reassuring. The most critical and urgent next step is to objectively confirm the diagnosis by measuring the intracompartmental pressure of the anterior compartment using a pressure monitor. A pressure reading within 30 mmHg of the diastolic blood pressure is highly indicative of compartment syndrome and necessitates an emergency surgical fasciotomy to prevent irreversible muscle and nerve damage. Duplex imaging (A) would rule out vascular injury but not compartment syndrome.

Question 114. Match each bone condition with its most appropriate treatment : 1. Osteosarcoma a. Wide excision 2. Simple bone cyst b. Curettage 3. Giant cell tu- mor c. Radiofrequency ab- lation 4. Osteoid osteo- ma d. Intralesional steroid

A. 1-d, 2-c, 3-b, 4-a

B. 1-c, 2-a, 3-d. 4-b

C. 1-a, 2-d, 3-b, 4-c

D. 1-d, 2-a, 3-b, 4-c

Correct answer: C

1-a, 2-d, 3-b, 4-c The matching requires knowledge of standard treatments for various bone tumors. Osteosarcoma (1) is a highly malignant primary bone cancer. The standard of care involves neoadjuvant chemotherapy followed by limb-sparing surgery, which requires wide excision (a) of the tumor with clear margins to prevent local recurrence. A simple bone cyst (2) is a benign, fluid-filled lesion common in children. A standard, minimally invasive treatment is aspiration of the cyst fluid followed by intralesional steroid injection (d) to promote healing. A giant cell tumor (3) of bone is a benign but locally aggressive tumor. The most common treatment is meticulous curettage (b), where the tumor is scraped out from the bone, often combined with an adjuvant like phenol or cryotherapy to kill any remaining cells. An osteoid osteoma (4) is a small, benign tumor causing classic night pain. The modern treatment of choice is minimally invasive percutaneous radiofrequency ablation (c), which uses heat to destroy the tumor's nidus.

Question 115. Please match the following options with their most suitable mode of management : 1. Osteosarcoma a. Wide excision 2. Simple bone cyst b. Curettage 3. Giant cell tumor c. Radiofrequency ablation 4. Osteoid osteoma d. Intralesional steroid

A. 1-d, 2-c, 3-b, 4-a

B. 1-c, 2-a, 3-d, 4-b

C. 1-a, 2-d, 3-b, 4-c

D. 1-d, 2-a, 3-b, 4-c

Correct answer: C

1-a, 2-d, 3-b, 4-c This is a duplicate of the previous question, requiring matching bone tumors to their standard treatments. For Osteosarcoma (1), a high-grade malignancy, the surgical cornerstone is wide excision (a) to achieve negative margins, usually as part of a multi-modal approach with chemotherapy. For a Simple bone cyst (2), a benign lesion, a common and effective treatment is intralesional steroid injection (d) to promote resolution of the cyst. For the locally aggressive Giant cell tumor (3), the standard surgical procedure is thorough curettage (b) to remove all tumor tissue from the bone cavity, often supplemented with an adjuvant to reduce recurrence. For the painful but benign Osteoid osteoma (4), the preferred modern, minimally invasive treatment is percutaneous radiofrequency ablation (c) to precisely destroy the symptomatic nidus.

Question 116. A 45-year-old patient presents to the emergency department with severe pain in a casted tibia fracture. After removing the cast, the examination shows painful passive extension, intact dorsalis pedis and posterior tibial pulses, and loss of sensation over the first web space. What is the most appropriate next step in managing this patient?

A. Duplex imaging NODIA page 613 INICET Examination Paper 146. What is the most likely reason for changing treatment from ampicillin to ceftriaxone in a 14-month-old child with Haemophilus influenzae meningitis?

B. Easier to administer IV ceftriaxone than IV ampicillin

C. Cotrimoxazole is the drug of choice, but patient is allergic to sulfa drugs

D. Haemophilus produces beta-lactamase, hence resistant to ampicillin

Correct answer: D

Hemophilus produces beta-lactamase, hence resistant to ampicillin The most common mechanism of resistance to ampicillin in Hemophilus influenzae is the production of the enzyme beta-lactamase. This enzyme hydrolyzes the beta-lactam ring of penicillin-class antibiotics like ampicillin, inactivating the drug. A significant proportion of H. influenzae strains, including those causing invasive diseases like meningitis, are beta-lactamase positive. For this reason, ampicillin is no longer recommended as a sole empirical therapy for serious H. influenzae infections. Third-generation cephalosporins, such as ceftriaxone, are stable in the presence of these beta-lactamases and have excellent penetration into the cerebrospinal fluid, making them the drug of choice for treating H. influenzae meningitis. Alteration of penicillin-binding proteins (A) is a mechanism of resistance seen in Streptococcus pneumoniae. 147. Match the following developmental milestones : 1. Transfers objects a. 1-2 months 2. Social smile b. 6-7 months 3. Pincer grasp c. 12-15 months 4. Walks 1-2 steps d. 9-12 months (A) 1-a, 2-b, 3-c, 4-d (B) 1-b, 2-a, 3-d, 4-c (C) 1-c, 2-b, 3-a, 4-d (D) 1-d, 2-c, 3-b, 4-a AAns (B) 1-b, 2-a, 3-d, 4-c This question matches key developmental milestones with their typical age of achievement. 2. Social smile : This is one of the earliest social milestones, where an infant smiles purposefully in response to a caregiver. It typically emerges between 1-2 months of age (a). 1. Transfers objects : The ability to pass an object from one hand to the other is a fine motor milestone that develops around 6-7 months (b). 3. Pincer grasp : The development of a fine pincer grasp, using the tips of the thumb and index finger to pick up small objects, typically matures between 9-12 months (d). 4. Walks 1-2 steps : The milestone of taking independent steps and walking usually occurs in the range of 12-15 months (c), although the normal range is wide. The correct matching sequence is therefore 1-b, 2-a, 3-d, 4-c. 148. A young child with no thymus presents with hypoparathyroidism and tetany. Based on the image, which marked area is defective in this condition? (A) 1 (B) 2 (C) 3 (D) 4 AAns (C) 3 The clinical triad of thymic aplasia (leading to T-cell immunodeficiency), hypoparathyroidism (leading to hypocalcemia and tetany), and congenital heart defects is characteristic of DiGeorge syndrome. This syndrome is caused by a microdeletion on chromosome 22q11.2, which leads to the maldevelopment of the third and fourth pharyngeal pouches. The image displays the embryonic pharyngeal pouches. The third pharyngeal pouch (labeled 3) is the structure that gives rise to the thymus and the inferior parathyroid glands. The fourth pharyngeal pouch (4) gives rise to the superior parathyroid glands and the ultimobranchial body. The failure of the third and fourth pouches to develop

properly explains the absent thymus and hypoparathyroidism seen in these patients. ORTHOPEDICS 149. A 15-year-old boy is brought to the emergency department after a motor vehicle accident with complaints of hip pain, and an X-ray has been performed. What is the most appropriate next step in management? (A) Closed reduction and assessment of hip stability (B) CT pelvis with 3D reconstruction (C) High weight skeletal traction (D) Open reduction and reconstruction of posterior pillar of acetabulum AAns (A) Closed reduction and assessment of hip stability The X-ray shows a posterior dislocation of the left hip, which is the most common type of hip dislocation and is often caused by high-energy trauma like a motor vehicle accident (dashboard injury). A posterior hip dislocation is an orthopedic emergency because the displaced femoral head can compress the blood supply, leading to avascular necrosis (AVN) of the femoral head. The most crucial and time-sensitive next step in management is to perform an immediate closed reduction of the dislocation under sedation or anesthesia. The goal is to restore the normal anatomy and relieve pressure on the blood vessels as quickly as possible, ideally within 6 hours of the injury. After the reduction is confirmed by X-ray, the stability of the hip is assessed. A CT scan (B) is typically performed after the reduction to look for associated acetabular or femoral head fractures, but reduction is the priority. 150. Which of the following statements are true about open fractures? 1. Tibia and phalanges are most commonly involved 2. Usually no co-existing injuries 3. Compartment syndrome does not occur in open fractures 4. Early debridement should be done (A) 1 and 2 (B) 1 and 4 (C) 2 and 4 (D) 2 and 3 AAns (B) 1 and 4 1. True. The bones most frequently involved in open fractures are those with minimal soft tissue coverage, making them more vulnerable to being exposed after injury. The tibia (shin bone) and the phalanges of the fingers and toes are the most common sites. 2. False. Open fractures are often the result of high-energy trauma. Therefore, they are frequently associated with significant co-existing injuries to other body systems, which must be assessed as part of the initial trauma evaluation. 3. False. This is a dangerous misconception. Compartment syndrome can and does occur in open fractures. Although the break in the skin may allow some pressure to be released, the underlying fascial compartments can still be intact, and significant bleeding or swelling within a compartment can raise the pressure to a critical level, compromising perfusion. 4. True. A cornerstone of open fracture management is prompt surgical intervention. Early and thorough irrigation and debridement of the wound is essential to remove all contaminated and devitalized tissue to minimize the high risk of infection. 151. Match the following fractures with their corresponding locations. a. Jones fracture 1. 5th metatarsal b. Bennett's fracture 2. 2nd metatarsal

Question 117. A 25-year-old male has difficulty flexing the distal interphalangeal joints of the 4th and 5th fingers and cannot hold a piece of paper between his fingers. Based on the image, where is the most likely site of his injury?

A. A

B. B

C. C

D. D

Correct answer: C

C The patient has difficulty flexing the distal interphalangeal (DIP) joints of the 4th and 5th fingers and cannot hold a piece of paper between the fingers. This suggests ulnar nerve injury. Ulnar nerve supplies: 1. Flexor digitorum profundus (medial half) → flexion of DIP joints of 4th and 5th digits 2. Interossei muscles → responsible for finger adduction (holding paper between fingers) 3. Lumbricals (medial two) Loss of DIP flexion in the 4th and 5th digits indicates involvement proximal to the branch supplying flexor digitorum profundus (i.e., above the wrist). In the image, point C corresponds to the medial epicondyle of the humerus, where the ulnar nerve passes posteriorly in the cubital tunnel. This is a common site of injury (“funny bone”). Thus, injury at the medial epicondyle (label C) explains the symptoms. Therefore, the most likely site of injury is C (Option C).

Question 118. Which of the following is not considered a lower urinary tract symptom (LUTS)?

A. Sudden urge to urinate

B. Incontinence while asleep

C. Incontinence when patient lies down and coughs

D. Incontinence during intercourse

Correct answer: D

Incontinence during intercourse Lower urinary tract symptoms (LUTS) refer to symptoms arising from the bladder, urethra, or prostate and are classified into storage, voiding, and post-micturition symptoms. Storage symptoms include urgency, frequency, nocturia, and urinary incontinence. 1. Option (A), sudden urge to urinate, represents urgency and is a classic storage symptom of LUTS. 2. Option (B), incontinence while asleep, corresponds to nocturnal enuresis and is also categorized under storage LUTS. 3. Option (C), incontinence when the patient lies down and coughs, describes stress urinary incontinence, which occurs due to increased intra-abdominal pressure and is included among lower urinary tract symptoms. 4. Option (D), incontinence during intercourse, is termed coital incontinence. Although it involves urinary leakage, it is generally considered part of sexual dysfunction rather than being classified within the standard LUTS framework. It is not routinely included in the International Continence Society’s core LUTS classification. Therefore, the correct answer is (D) Incontinence during intercourse.

Question 119. A 26-year-old woman with two previous vaginal deliveries presents with ongoing abdominal discomfort, irregular menstrual cycles, and a palpable mass on vaginal examination. Ultrasound confirms a 5 × 5 cm ovarian cyst. What is the

most appropriate next step in her management?

A. Follow up after 6 weeks

B. Measure CA 125 levels

C. Laparoscopy

D. CT pelvis

Correct answer: A

Follow up after 6 weeks The management of an ovarian cyst in a premenopausal woman depends on its size, characteristics on ultrasound, and the presence of symptoms. In this 26-year-old patient, a 5x5 cm cyst is discovered. The vast majority of such cysts in this age group are benign, functional cysts (e.g., follicular or corpus luteum cysts) that are related to the menstrual cycle. The standard and most appropriate initial management for a simple-appearing cyst of this size in a premenopausal woman is conservative. This involves a period of observation with a follow-up ultrasound after 6-8 weeks, which covers one to two menstrual cycles. Most functional cysts will resolve spontaneously within this time frame. Measuring CA 125 (B) is generally not recommended as a first step in premenopausal women as it can be elevated by many benign conditions. Immediate surgical intervention like laparoscopy (C) or further imaging with a CT scan (D) is not indicated unless the cyst has suspicious features (e.g., solid components, septations) or is causing acute symptoms like torsion.

Question 120. Which of the following is not a part of the quadruple screening test?

A. Inhibin B

B. Unconjugated Estriol (E3)

C. AFP

D. hCG

Correct answer: A

Inhibin B The quadruple screen, or "quad test," is a maternal serum screening test performed during the second trimester of pregnancy (typically between 15 and 22 weeks) to assess the risk for certain fetal chromosomal abnormalities and neural tube defects. The test measures the levels of four specific substances in the mother's blood : 1. Alpha-fetoprotein (AFP) (C) 2. Human chorionic gonadotropin (hCG) (D) 3. Unconjugated estriol (uE3) (B) 4. Inhibin A These four markers are analyzed together with maternal age to calculate a risk score for Down syndrome (Trisomy 21), Trisomy 18, and open neural tube defects. Inhibin B (A) is a different hormone that is primarily used as a marker of ovarian reserve and granulosa cell function in females or Sertoli cell function in males; it is not a component of the quadruple screening test.

Question 121. Which fixative is employed for a Pap smear?

A. Formalin

B. Air dried

C. Normal saline

D. 95% ethanol

Correct answer: D

95% ethanol For a conventional Papanicolaou (Pap) smear, proper and immediate fixation of the cervical cells on the glass slide is absolutely critical to preserve cellular morphology and prevent air-drying artifacts, which can render the specimen uninterpretable. The gold standard and most widely used fixative is 95% ethanol. The slide should be immersed in the ethanol solution or sprayed with a commercially available cytology spray fixative (which has an ethanol base) immediately after the sample is smeared. This wet-fixation process preserves the fine nuclear and cytoplasmic details necessary for accurate cytological diagnosis. Formalin (A) is the standard fixative for tissue biopsies (histology), not for cytology smears. Air drying (B) is used for hematology smears (e.g., peripheral blood) but causes significant distortion in Pap smears. Normal saline (C) is not a fixative.

Question 122. What is considered the optimal percentage of normal sperm morphology in a semen analysis?

A. 10%

B. 4%

C. 6%

D. 8%

Correct answer: B

4% According to the most recent World Health Organization (WHO) guidelines for the examination and processing of human semen (5th and 6th editions), the lower reference limit for normal sperm morphology is 4%. This evaluation is performed using strict criteria, known as the Kruger's strict criteria, which assess the size and shape of the sperm head, midpiece, and tail. A semen sample is considered to have normal morphology if 4% or more of the observed spermatozoa have a normal form. A value below 4% is defined as teratozoospermia. This relatively low threshold reflects the high degree of morphological variability in human sperm and the stringent criteria used for classification. The older WHO editions used higher cut-off values, but the current standard is 4%.

Question 123. What is the most likely diagnosis in an 18-year- old girl who has amenorrhea, normal genitalia and breast development, and tests positive for 5-alpha-reductase deficiency?

A. Mullerian agenesis

B. Concealed sex

C. AIS (Androgen Insensitivity Syndrome)

D. Turner's syndrome

Correct answer: B

Concealed sex. Let's break down the clinical picture to arrive at the diagnosis : 1. Patient Profile

: An 18-year-old who appears female, with normal breast development and female external genitalia, but has never had a menstrual period (primary amenorrhea). 2. Key Lab Test : She tests positive for 5-alpha-reductase deficiency. 5-alpha-reductase is a crucial enzyme that converts testosterone into the much more potent dihydrotestosterone (DHT). DHT is essential for the development of male external genitalia during fetal development. In an individual with a 46,XY (male) karyotype and 5-alpha-reductase deficiency : 1. In Utero : The lack of DHT means the external genitalia do not masculinize, leading to the development of female-appearing external genitalia. These individuals are typically assigned female at birth and raised as girls. 2. Internal Organs : They have testes (which may be undescended) that produce Anti-Müllerian Hormone, so they do not develop a uterus or fallopian tubes. This is why the patient has amenorrhea. 3. At Puberty : The testes produce a surge of testosterone. This testosterone can be converted into estrogen, leading to the development of female breasts. This entire scenario creates a discordance between the individual's genetic sex (male, XY) and their external physical appearance (female). This condition is what is being referred to by the somewhat outdated term "Concealed sex", as the male genetic identity is hidden by a female phenotype. Why Other Options Are Incorrect (A) Mullerian agenesis : This affects 46,XX (female) individuals who are born without a uterus. They have normal ovaries and develop breasts, but have amenorrhea. This diagnosis is inconsistent with a 5-alpha-reductase deficiency, which affects 46,XY individuals. (C) AIS (Androgen Insensitivity Syndrome) : This is also a condition in 46,XY individuals who appear female. However, the cause is a defect in androgen receptors, meaning their body cannot respond to testosterone or DHT. While the physical presentation is very similar, the specific diagnosis of 5-alpha-reductase deficiency rules out AIS. (D) Turner's syndrome : This is caused by a 45,X0 karyotype. These individuals are female but have non-functional ovaries, leading to a lack of estrogen and failure to develop breasts without hormone therapy. This does not match the patient's presentation.

Question 124. A 32-year-old pregnant woman with monochorionic diamniotic twins shows polyhydramnios in one twin and oligohydramnios in the other on an ultrasound. What is the most likely complication indicated by these findings?

A. Selective fetal growth restriction

B. Preterm labor

C. Twin to twin transfusion syndrome

D. Neural tube defects

Correct answer: C

Twin to twin transfusion syndrome The ultrasound finding of polyhydramnios (excess amniotic fluid) in one twin and oligohydramnios (deficient amniotic fluid) in the other twin in a monochorionic pregnancy (twins sharing a single placenta) is the pathognomonic sign of Twin-to-Twin Transfusion Syndrome (TTTS). This serious complication arises due to unbalanced

blood flow through inter-twin vascular anastomoses on the shared placental surface. One twin, the "donor," transfuses blood to the other, the "recipient." The donor twin becomes anemic and hypovolemic, leading to poor renal perfusion and oligohydramnios. The recipient twin becomes hypervolemic and polycythemic, leading to cardiac strain and polyuria, which results in polyhydramnios. This combination of oligohydramnios in the donor and polyhydramnios in the recipient is the defining feature of TTTS.

Question 125. Please match the following disorders that cause secondary amenorrhea with their corresponding laboratory findings. Condition Lab markers 1. Sheehan's syndrome a. Normal LH, Normal FSH, Normal estra- diol 2. Premature Ovarian Failure b. High LH, Low FSH, Normal estradiol 3. PCOS (Polycystic Ovary Syndrome) c. Low LH, Low FSH, Low es- tradiol 4. Asherman's syn- drome d. High LH, High FSH, Low es- tradiol

A. 1-c, 2-d, 3-b, 4-a

B. 1-d, 2-b, 3-c, 4-a

C. 1-c, 2-b, 3-d, 4-a

D. 1-a, 2-b, 3-d, 4-c

Correct answer: A

1-c, 2-d, 3-b, 4-a 1. Sheehan's syndrome : This is hypopituitarism from postpartum pituitary necrosis. The pituitary cannot produce gonadotropins, resulting in low LH, low FSH, and consequently low estradiol (c). This is hypogonadotropic hypogonadism. 2. Premature Ovarian Failure (POF) : The ovaries fail and do not produce estradiol. The lack of negative feedback from estradiol causes the pituitary to secrete excessive gonadotropins, resulting in high LH, high FSH, and low estradiol (d). This is hypergonadotropic hypogonadism. 3. PCOS : This condition is characterized by hypothalamic-pituitary-ovarian axis dysregulation, typically leading to a high LH to FSH ratio (high LH, relatively low or normal FSH), with normal or slightly elevated estradiol levels due to peripheral conversion of androgens (b). 4. Asherman's syndrome : This is an outflow tract problem due to intrauterine adhesions. The HPO axis is functioning normally. Therefore, LH, FSH, and estradiol levels will be normal (a).

Question 126. Which diagnostic test is used to identify a unicornuate uterus among the following options? 1. Falloposcopy 2. Laparoscopy 3. HSG (Hysterosalpingography) 4. X-ray

A. 2,4

B. 1,2

C. 1,3

D. 2,3

Correct answer: D

2,3 A unicornuate uterus is a type of Mullerian duct anomaly where only one horn of the uterus

develops. 3. Hysterosalpingography (HSG) : This is an X-ray procedure where contrast dye is injected into the uterus. In a unicornuate uterus, the HSG will outline a single, often "banana-shaped" uterine cavity that is connected to only one fallopian tube. It is an excellent screening test for the internal uterine anatomy. 2. Laparoscopy : This is a surgical procedure that allows direct visualization of the external surface of the uterus and pelvic organs. It is considered the gold standard for confirming the diagnosis, as it can definitively show the presence of only one uterine horn and can also identify a rudimentary horn if one is present. 1. Falloposcopy is used to visualize the inside of the fallopian tubes. A plain X-ray (4) cannot visualize the uterus. 3D ultrasound and MRI are also excellent non-invasive methods, but of the choices given, HSG and laparoscopy are the key diagnostic tests.

Question 127. Please match the following colors of STI kits with their corresponding use : a. Lower abdominal pain 1. Grey, Kit 1 b. Urethral discharge 2. Green, Kit 2 c. Non herpetic genital ulcer 3. White, Kit 3 d. Vaginal discharge 4. Yellow, Kit 6

A. a-4, b-3, c-2, d-1

B. a-4, b-1, c-3, d-2

C. a-1, B-4, C-3, d-2

D. a-3, b-2, c-4, d-1

Correct answer: B

a-4, b-1, c-3, d-2 Under India's National AIDS Control Organisation (NACO), syndromic management of sexually transmitted infections (STIs) is promoted using pre-packaged, color-coded kits. The matching is as follows : 1. Kit 1 (Grey) : Used for the treatment of urethral discharge, cervicitis, and anorectal discharge (b). 2. Kit 2 (Green) : Used for the treatment of vaginal discharge (vaginitis and cervicitis) (d). 3. Kit 3 (White) : Used for the treatment of non-herpetic genital ulcers (e.g., syphilis, chancroid) (c). There are variations (Kit 4-Blue for non-herpetic, Kit 5-Red for herpetic). Let's assume this refers to the general ulcer kit. 4. Kit 6 (Yellow) : Used for the treatment of lower abdominal pain, which is the syndrome for Pelvic Inflammatory Disease (PID) (a). The correct sequence of matches is therefore a-4, b-1, c-3, d-2.

Question 128. What is the fasting blood glucose cut-off value recommended by the IADPSG (International Association of Diabetes and Pregnancy Study Group) for the diagnosis of gestational diabetes mellitus (GDM)?

A. >92 mg/dL

B. >95 mg/dL

C. >106 mg/dL

D. >90 mg/dL

Correct answer: A

>92 mg/dL The International Association of the Diabetes and Pregnancy Study Groups (IADPSG) proposed a one-step approach for diagnosing Gestational Diabetes Mellitus (GDM), which has

been adopted by many organizations, including the WHO and the American Diabetes Association. This approach involves a 75-gram, 2-hour oral glucose tolerance test (OGTT) performed between 24 and 28 weeks of gestation. GDM is diagnosed if any one of the following plasma glucose values is met or exceeded : 1. Fasting : ≥92 mg/dL 2. 1-hour : ≥180 mg/dL 3. 2-hour : ≥153 mg/dL Therefore, the specific IADPSG cut-off for the fasting blood glucose value is 92 mg/dL. The older two-step Carpenter-Coustan criteria used a fasting cut-off of >95 mg/dL (B).

Question 129. What steps would you take to identify the cause of postmenopausal bleeding in a 62-year- old woman with a history of diabetes and hypertension?

A. Pap smear

B. Visual inspection with iodine

C. Colposcopy

D. Endometrial sampling

Correct answer: D

Endometrial sampling Postmenopausal bleeding (PMB) is considered a cardinal sign of endometrial cancer until proven otherwise. Any episode of vaginal bleeding occurring one year or more after menopause requires a thorough evaluation of the endometrium. The patient's risk factors for endometrial cancer are also significant (age, diabetes, hypertension). The most important and definitive step in the workup is to obtain a tissue sample from the uterine lining for histological analysis. This can be done via an office-based endometrial biopsy (a form of endometrial sampling) or a formal dilatation and curettage (D&C), often with hysteroscopy. A Pap smear (A) is a screening test for cervical cancer, not endometrial cancer, although it can occasionally detect endometrial cells. Visual inspection (B) and colposcopy (C) are used to evaluate the cervix, not the endometrium.

Question 130. What does the World Health Organization (WHO) recommend for the management of the second stage of labor?

A. Mandatory episiotomy

B. Manual perineal support and warm compresses

C. Maintain head in deflexion and deliver

D. Deliver in lithotomy position only

Correct answer: B

Manual perineal support and warm compresses The World Health Organization (WHO) emphasizes a patient-centered, evidence-based approach to childbirth. For the management of the second stage of labor in a woman at low risk, the WHO recommends several practices to promote a positive birth experience and reduce trauma. These include encouraging the woman to push in a position of her choice and using techniques to protect the perineum. Specifically, the guidelines support the use of manual perineal support (guarding the perineum) and the

application of warm compresses to the perineum during the second stage. These interventions have been shown to reduce the risk of third and fourth-degree perineal tears. The WHO explicitly recommends against routine or mandatory episiotomy (A). It also advises against maintaining the head in deflexion (C); flexion is the desired attitude. It encourages women to deliver in positions other than the lithotomy position (D).

Question 131. Which diagnostic test is most effective for distinguishing obstructive azoospermia from testicular azoospermia in an infertile couple?

A. Serum FSH levels

B. Serum testosterone levels

C. Testicular biopsy

D. Serum LH levels

Correct answer: A

Serum FSH levels Azoospermia is the absence of sperm in the ejaculate. It can be caused by a blockage in the reproductive tract (obstructive azoospermia) or a failure of the testes to produce sperm (non-obstructive or testicular azoospermia). Measuring the serum Follicle-Stimulating Hormone (FSH) level is the most important initial blood test to differentiate between these two causes. The Sertoli cells in the testes produce inhibin B, which exerts negative feedback on pituitary FSH secretion. In non-obstructive azoospermia, the damaged testes fail to produce sperm and inhibin B, leading to a loss of negative feedback and consequently high serum FSH levels. In obstructive azoospermia, spermatogenesis is normal, so inhibin B levels are normal, and therefore FSH levels are also normal. Testosterone (B) and LH (D) levels can provide additional information but are less specific for differentiating the cause of azoospermia.

Question 132. What is the prescribed dosage of dexamethasone administered to promote fetal lung maturity?

A. 2 doses of 6 mg given 12 hours apart

B. 2 doses of 12 mg given 24 hours apart

C. 4 doses of 6 mg given 12 hours apart

D. 4 doses of 12 mg given 12 hours apart

Correct answer: C

4 doses of 6 mg given 12 hours apart Antenatal corticosteroids are administered to pregnant women at risk of preterm delivery to accelerate fetal lung maturation and reduce the risk of neonatal respiratory distress syndrome. The two standard corticosteroid regimens are betamethasone and dexamethasone. The recommended regimen for dexamethasone consists of four intramuscular doses of 6 mg each, given 12 hours apart, for a total dose of 24 mg. The alternative regimen using betamethasone consists of two intramuscular doses of 12 mg each, given 24 hours apart (B), also for a total dose of 24 mg. Both regimens are considered equally

effective. The question specifically asks for the dexamethasone dosage, which is 6 mg every 12 hours for a total of four doses.

Question 133. Which emergency contraceptive is commonly utilized in India among the options provided?

A. Levonorgestrel 1.5 mg

B. Misoprostol 400 mcg

C. Ethinyl estradiol 600 mcg

D. Ulipristal 30 mg

Correct answer: A

Levonorgestrel 1.5 mg The most widely available and commonly used dedicated oral emergency contraceptive pill (ECP) in India, and indeed globally, is levonorgestrel. It is most effective when taken as soon as possible after unprotected intercourse. The standard regimen is a single dose of 1.5 mg. It is readily available over-the-counter in pharmacies under various brand names (e.g., i-Pill, Unwanted-72). Ulipristal acetate (D) is another effective oral ECP, but it is less commonly available in India and often requires a prescription. Misoprostol (B) is a prostaglandin analogue used for medical abortion and labor induction, not as an emergency contraceptive. High-dose ethinyl estradiol (C) was part of the older, less effective, and side-effect-prone Yuzpe regimen, which is no longer recommended.

Question 134. In a 17-year-old patient, what is the most distinctive and characteristic feature of juvenile dermatomyositis?

A. Photosensitive skin rash

B. Nail bed capillary changes

C. Gottron's papules

D. Malar rash

Correct answer: C

Gottron's papules Juvenile dermatomyositis (JDM) is an autoimmune inflammatory disease affecting the skin and muscles. While it presents with a constellation of signs, certain skin findings are considered pathognomonic, meaning they are so characteristic that their presence is virtually diagnostic. The two pathognomonic signs of dermatomyositis are the heliotrope rash (a violaceous rash on the eyelids) and Gottron's papules. Gottron's papules are erythematous to violaceous, scaly papules and plaques located over the extensor surfaces of the joints, most classically the knuckles. While other rashes like a photosensitive rash (A) or a malar rash (D) can occur, they are less specific. Nail bed capillary changes (B), such as dilated and tortuous capillary loops seen on capillaroscopy, are highly characteristic and part of the diagnostic criteria, but Gottron's papules are considered the most distinctive cutaneous sign.

Question 135. Which anesthetic agent can be used for induction, maintenance of

anesthesia, and to allow safe endotracheal intubation?

A. Sevoflurane

B. Halothane

C. Desflurane

D. Isoflurane

Correct answer: A

Sevoflurane The agent described needs to be suitable for inhalational induction, a technique where anesthesia is induced by breathing the agent rather than by IV injection. This requires an agent that is non-pungent, non-irritating to the airway, and has a low blood :gas partition coefficient for rapid onset. Sevoflurane is the ideal agent that fits all these criteria. It has a pleasant, non-irritating odor, allowing for a smooth inhalational induction, especially in children. Its low solubility allows for rapid induction and emergence. It is also a potent bronchodilator, which can facilitate intubation. In contrast, desflurane (C) is extremely pungent and causes airway irritation, coughing, and laryngospasm, making it unsuitable for inhalational induction. Isoflurane (D) is also pungent and not typically used for induction. Halothane (B) allows for smooth induction but has been largely replaced due to its association with hepatotoxicity and arrhythmias.

Question 136. Which anesthetic agent was most likely given to a patient who developed rigidity, tremors, and trismus after administration?

A. Halothane

B. Nitrous Oxide (NO 2)

C. Thiopentone sodium

D. Etomidate

Correct answer: D

Etomidate Etomidate is an intravenous anesthetic induction agent known for its cardiovascular stability. However, one of its most prominent and characteristic side effects is myoclonus, which can manifest as involuntary muscle movements, tremors, rigidity, and sometimes trismus (lockjaw). This is thought to be caused by disinhibition of subcortical neuronal activity. The incidence of myoclonus with etomidate is quite high, occurring in 30-80% of patients if not premedicated. While other agents can occasionally cause movement, it is a hallmark side effect of etomidate. Thiopentone (C) can cause a "hiccup" or tremor but not typically rigidity. Halothane (A) is an inhalational agent. Nitrous oxide (B) does not typically cause these effects when used as an adjunct.

Question 137. What is the most likely diagnosis for a patient who received a 20% intralipid injection during resuscitation?

A. Local anesthesia toxicity

B. Asphyxia due to drowning

C. Electrocution

D. Pulseless electrical activity

Correct answer: A

Local anesthesia toxicity The administration of a 20% intravenous lipid emulsion (Intralipid) is the specific and standard antidote for managing Local Anesthetic Systemic Toxicity (LAST). LAST is a rare but life-threatening complication that can occur after the administration of a large dose of a local anesthetic, especially if accidentally injected intravenously. It presents with CNS symptoms (seizures, coma) and severe cardiovascular collapse (arrhythmias, asystole). The lipid emulsion is thought to work as a "lipid sink," effectively sequestering the lipophilic local anesthetic molecules from their sites of action in the heart and brain, thereby reversing the toxicity. Seeing this specific treatment being used during a resuscitation strongly implies that the underlying cause of the cardiac arrest was local anesthetic toxicity.

Question 138. Which post-bronchodilator pulmonary function test (PFT) finding would indicate that a 50-year- old male with ASA grade 3 requires further evaluation of lung function?

A. FEV1 0.85 and FEV1/FVC < 0.8

B. FEV1 0.85 and FEV1/FVC < 0.75

C. FEV1 0.85 and FEV1/FVC < 0.7

D. FEV1 < 0.8 and FEV1/FVC < 0.75

Correct answer: C

FEV1 0.85 and FEV1/FVC < 0.7 The diagnosis of chronic obstructive pulmonary disease (COPD) and other obstructive lung diseases is based on spirometry. The key diagnostic criterion is the presence of airflow limitation that is not fully reversible. This is defined by the ratio of the forced expiratory volume in the first second (FEV1) to the forced vital capacity (FVC). According to the Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria, a post-bronchodilator FEV1/FVC ratio of less than 0.70 confirms the presence of persistent airflow limitation. The severity of the obstruction is then graded based on the post-bronchodilator FEV1 percent predicted. An FEV1 of 0.85 (85% of predicted) would indicate mild obstruction (GOLD stage 1), but the diagnostic ratio is the FEV1/FVC < 0.7. An ASA grade 3 status indicates a patient with severe systemic disease, making pre-operative lung function assessment critical.

Question 139. Which agent is most likely responsible when a patient under halothane anesthesia develops hyperthermia and muscle rigidity during surgery?

A. D-tubocurarine

B. Suxamethonium

C. Cisatracurium

D. Rocuronium

Correct answer: B

Suxamethonium The patient's presentation of sudden hyperthermia, muscle rigidity, tachycardia, and hypercapnia during general anesthesia is the classic picture of malignant hyperthermia (MH). MH is a rare, life-threatening pharmacogenetic disorder of skeletal muscle. It is triggered in susceptible individuals by exposure to specific anesthetic agents. The two main classes of triggering agents are all volatile halogenated anesthetics (like halothane) and the depolarizing neuromuscular blocking agent suxamethonium (succinylcholine). The combination of a volatile agent and suxamethonium is particularly potent in triggering an MH crisis. The other neuromuscular blockers listed—d-tubocurarine (A), cisatracurium (C), and rocuronium (D)—are non-depolarizing agents and are considered safe to use in MH-susceptible patients as they do not trigger the condition.

Question 140. A young male receiving regional anesthesia with 0.25% bupivacaine becomes unresponsive, and his pulse is no longer detectable. What is the best management approach?

A. CPCR with 20% Intralipid

B. CPCR with sodium bicarbonate

C. CPCR with dobutamine

D. CPCR with calcium

Correct answer: A

CPCR with 20% Intralipid The patient has suffered a cardiac arrest immediately following the administration of bupivacaine, a potent local anesthetic. This is highly suggestive of Local Anesthetic Systemic Toxicity (LAST), specifically cardiotoxicity. Bupivacaine is particularly cardiotoxic and can cause refractory arrhythmias and asystole. The management of cardiac arrest due to LAST requires adherence to standard advanced cardiac life support (ACLS) protocols, including high-quality cardiopulmonary cerebral resuscitation (CPCR). However, a specific and crucial addition to the standard protocol is the immediate administration of a 20% intravenous lipid emulsion (Intralipid). This lipid emulsion therapy acts as a "lipid sink," sequestering the lipophilic bupivacaine molecules from cardiac tissue and helping to reverse the toxicity. It is the cornerstone of treatment for severe LAST and should be initiated as soon as the diagnosis is suspected. RADIOLOGY

Question 141. A female patient presents with abdominal pain and is found on ultrasound to have multiple gallstones without gallbladder wall thickening, and a common bile duct diameter of 12 mm. Her labs show serum bilirubin 0.8, alkaline phosphatase 380, and a five-fold increase in GGT. What is the most appropriate next step in management?

A. MRCP

B. ERCP

C. Endoscopic ultrasound

D. Laparoscopic cholecystectomy

Correct answer: A

MRCP This patient has gallstones (cholelithiasis) and evidence strongly suggestive of a stone that has migrated into the common bile duct (choledocholithiasis). The key findings are a dilated common bile duct (12 mm; normal is <6-8 mm) and a cholestatic pattern of liver enzyme elevation (markedly elevated alkaline phosphatase and GGT with normal bilirubin). The absence of gallbladder wall thickening makes acute cholecystitis less likely. The next step is to confirm the presence and location of the suspected CBD stone. Magnetic Resonance Cholangiopancreatography (MRCP) is the best non-invasive imaging modality for this purpose. It provides detailed images of the entire biliary tree without the risks associated with an invasive procedure. ERCP (B) is an invasive therapeutic procedure used to remove stones but carries a risk of pancreatitis and should be preceded by a non-invasive confirmation with MRCP.

Question 142. In a 56-year-old patient with obstructive jaundice showing a distended gallbladder, a dilated common bile duct, and enlarged intrahepatic NODIA page 624 Answer response to stretch, and tubuloglomerular feedback (TGF)

A. , mediated by the macula densa. While the renin-angiotensin system (RAS)

B. Length-velocity relationship

C. is often considered an extrinsic system, angiotensin II plays a role in autoregulation by constricting the efferent arteriole, helping to maintain GFR when renal perfusion pressure drops. In contrast, the renal sympathetic nervous system

D. is a purely extrinsic control mechanism. Strong sympathetic stimulation (e.g., during shock or intense exercise) causes profound vasoconstriction of the afferent arterioles, which can override the intrinsic autoregulatory mechanisms to reduce GFR and divert blood flow away from the kidneys. The stroke volume depends on end-diastolic volume. This is best represented as?

Correct answer: A

Arterial puncture The image points to the clavicle. The placement of a central venous catheter via the subclavian approach involves inserting a needle just inferior to the clavicle to access the subclavian vein. The subclavian artery lies immediately posterior and superior to the subclavian vein. Due to this close proximity, the most common immediate mechanical complication during a subclavian line insertion is the inadvertent puncture of the subclavian artery. This can be recognized by the pulsatile backflow of bright red blood and can lead to significant complications like hematoma, hemothorax, or pseudoaneurysm. While other complications like pneumothorax are also common, arterial puncture is generally cited as the most frequent. Thrombophlebitis (B) is a later complication. Empyema (C) is an infectious complication. Chylothorax (D) is a rare complication caused by injury to the thoracic duct, more common on the left side.

Question 143. Which imaging technique is most suitable for diagnosing primary hyperparathyroidism in a woman presenting with confusion, constipation, headache, and elevated serum calcium (13.1 mg/ dL) along with elevated alkaline phosphatase (ALP) levels?

A. MRI

B. FDG PET

C. CT

D. Sestamibi Scan

Correct answer: D

Sestamibi Scan The patient's symptoms and laboratory findings (hypercalcemia with elevated ALP) are highly suggestive of primary hyperparathyroidism, which is most commonly caused by a single, benign parathyroid adenoma. The goal of preoperative imaging is to localize this adenoma. The most common and effective functional imaging technique for this purpose is a Technetium-99m Sestamibi Parathyroid Scan. Sestamibi is a radiotracer that is taken up by both the thyroid gland and any hyperfunctioning parathyroid tissue (like an adenoma). In a dual-phase scan, an early image shows uptake in both tissues. A delayed image (at 2-4 hours) is then taken. The tracer washes out of the normal thyroid tissue much faster than it does from the hyperactive parathyroid adenoma, which retains the tracer and appears as a persistent "hot spot." This allows for the precise localization of the adenoma before surgery.

Question 144. Which of the following statements is accurate concerning the COVID-19 Reporting and Data System (CORADS)?

A. CORADS-0 indicates normal lung

B. CORADS-5 is typical of COVID-19

C. Pleural thickening is typical of COVID-19

D. Lobar consolidation is typical of COVID-19

Correct answer: B

CORADS-5 is typical of COVID-19 The CO-RADS (COVID-19 Reporting and Data System) is a standardized scheme for reporting chest CT findings in patients with suspected COVID-19 infection. It categorizes the level of suspicion on a scale from 1 to 5. 1. CO-RADS 5 is assigned when the CT findings are typical and highly characteristic of COVID-19 pneumonia. These classic findings include bilateral, peripheral, and basal predominant ground-glass opacities, often with a rounded morphology. 2. CO-RADS 0 (A) is for an uninterpretable scan. CO-RADS 1 indicates a normal or non-infectious finding. 3. Pleural thickening (C) and large lobar consolidation (D) are considered atypical features for COVID-19 and would more likely be classified as CO-RADS 3 (equivocal) or CO-RADS 4 (suspicious but not classic).

Question 145. Which phase of the cell cycle displays the highest resistance to radiation?

A. M phase

B. G1 phase

C. S phase

D. G2 phase

Correct answer: C

S phase The sensitivity of a cell to the damaging effects of ionizing radiation varies significantly throughout the cell cycle. Cells are most sensitive to radiation during the M (mitosis) phase and the G2 phase. They are less sensitive during the G1 phase. The phase of the cell cycle where cells are the most resistant to radiation is the late S (synthesis) phase. During the S phase, the cell is actively replicating its DNA. The presence of homologous DNA sister chromatids and the upregulation of DNA repair enzymes (like those involved in homologous recombination) during this phase are thought to confer a higher capacity to repair radiation-induced DNA double-strand breaks, thus making the cell more radioresistant. This principle is important in radiation oncology, as it influences the effectiveness of fractionated radiotherapy schedules.

Question 146. Which of the following are the primary diagnostic modalities for identifying placenta accreta? 1. Ultrasonography 2. MRI 3. Angiography 4. X-ray

A. 1 and 3 only

B. 1 and 2 only

C. 2 and 3 only

D. 1 and 4 only

Correct answer: B

1 and 2 only Placenta Accreta Spectrum (PAS) disorders are life-threatening conditions where the placenta attaches abnormally deeply into the uterine wall. Antenatal diagnosis is crucial for planning a safe delivery. The primary and most important screening and diagnostic modality is ultrasonography (1), particularly a detailed transvaginal ultrasound performed by an experienced operator. Specific sonographic signs include loss of the normal clear space behind the placenta, placental lacunae, and abnormalities of the uterine-bladder interface. Magnetic Resonance Imaging (MRI) (2) is used as an adjunctive imaging modality, especially in cases where the ultrasound is inconclusive, for posterior placentas, or to assess the depth of myometrial invasion and potential involvement of adjacent organs like the bladder. Angiography (3) is an interventional radiology technique that may be used therapeutically at the time of delivery to control bleeding but is not a diagnostic tool. A plain X-ray (4) cannot visualize the placenta. PSYCHIATRY

Question 147. Match the following conditions to their descriptions : a. Depression 1. The feeling goes away as soon as you leave the hospital b. Suicide 2. State of emotional and physical exhaustion caused by prolonged stress, relieved after re- laxation c. Burnout 3. Difficult to diagnose due to the shell of phy- sician's pride d.

Overworking 4. Women physicians, substance abuse, rela- tionship troubles

A. a-3, b-4, c-1, d-2

B. a-4, b-3, c-1, d-2

C. a-3, b-4, c-2, d-1

D. a-2, b-1, c-3, d-4

Correct answer: C

a-3, b-4, c-2, d-1 This question correctly matches mental health conditions and work-related stressors, particularly relevant in high-stress professions like medicine, with their appropriate descriptions. 1. Depression (a-3) : This matches with "Difficult to diagnose due to the shell of physician's pride." Physicians often face immense pressure to appear competent and resilient. This culture can create a "shell of pride," making it difficult for them to acknowledge vulnerability or seek help for mental health issues like depression. Fear of stigma, professional repercussions, and a belief that they should be able to "handle it" themselves often lead to delayed diagnosis and treatment. 2. Suicide (b-4) : This is linked to "Women physicians, substance abuse, relationship troubles." These are all well-documented risk factors for suicide, especially within the medical community. Female physicians, in particular, have a significantly higher suicide rate than the general female population. The high-stress environment can also contribute to substance abuse as a coping mechanism and strain personal relationships, further elevating suicide risk. 3. Burnout (c-2) : This is accurately described as a "State of emotional and physical exhaustion caused by prolonged stress, relieved after relaxation." Burnout is a specific work-related syndrome characterized by emotional exhaustion, depersonalization (cynicism), and a reduced sense of personal accomplishment. While relaxation and time off can provide temporary relief, burnout is a deeper state of exhaustion that often requires significant changes in the work environment or coping strategies to fully resolve. 4. Overworking (d-1) : This is matched with "The feeling goes away as soon as you leave the hospital." This describes the direct, situational stress of working excessive hours. Unlike the pervasive nature of burnout or depression, the negative feelings associated with simply overworking are often tied directly to the workplace and tend to dissipate once the individual is away from that environment.

Question 148. Match the following conditions to their descriptions : a. Twilight state 1. Subnormal intelli- gence b. Oneiroid state 2. Impaired level of consciousness c. Oligophrenia 3. Persecution d. Paranoid ide- ation 4. Oneirophrenia

A. a-4, b-2, c-3, d-1

B. a-3, b-4, c-1, d-2

C. a-1, b-4, c-2, d-3

D. a-2, b-4, c-1, d-3

Correct answer: D

a-2, b-4, c-1, d-3 This question matches various psychiatric states and conditions with their

correct definitions. 1. Twilight state (a-2) : This correctly matches with "Impaired level of consciousness." A twilight state is a transient condition where consciousness is clouded. An individual in this state may appear to be awake but has reduced awareness of their surroundings and may perform complex actions (automatisms) for which they later have no memory (amnesia). It can be associated with conditions like epilepsy, head injury, or dissociative disorders. 2. Oneiroid state (b-4) : This is linked to "Oneirophrenia." The term 'oneiroid' is derived from the Greek word for dream (oneiros) and describes a dream-like state of consciousness. It is characterized by a blurring of reality and fantasy, often with vivid hallucinations. Oneirophrenia is a psychiatric syndrome, sometimes considered a form of schizophrenia, where this dream-like state is the primary feature. 3. Oligophrenia (c-1) : This matches "Subnormal intelligence." Oligophrenia is an outdated term for what is now referred to as intellectual disability. It describes a condition characterized by significantly below-average intellectual functioning and limitations in adaptive behaviors (e.g., communication, self-care) that originates during the developmental period. 4. Paranoid ideation (d-3) : This is accurately matched with "Persecution." Paranoid ideation involves thoughts and beliefs centered on being persecuted, harmed, or conspired against by others. These thoughts range from mild, non-delusional suspiciousness to fixed, irrational paranoid delusions. It is a key symptom of paranoid schizophrenia and delusional disorder.

Question 149. Which of the following statements accurately describes obsessive-compulsive disorder (OCD)?

A. Atypical antipsychotics are the first line of treatment

B. Prevalence is 7-10 percent in the general population

C. Depression is a common comorbidity

D. Contamination is an uncommon obsession

Correct answer: C

Depression is a common comorbidity This statement is the most accurate description of obsessive-compulsive disorder (OCD) among the choices provided. OCD is an anxiety disorder characterized by obsessions (intrusive, unwanted thoughts) and compulsions (repetitive behaviors performed to relieve anxiety). Major Depressive Disorder (MDD) is the most common co-occurring (comorbid) condition with OCD. Studies indicate that over 50% of individuals with OCD will experience a major depressive episode in their lifetime. The constant distress, anxiety, and functional impairment caused by OCD symptoms can contribute to feelings of hopelessness and sadness, leading to depression. Conversely, the presence of depression can worsen OCD symptoms and make treatment more challenging. The other options are incorrect for the following reasons : 1. (A) The first-line treatments for OCD are Selective Serotonin Reuptake Inhibitors (SSRIs) and a type of cognitive-behavioral therapy called Exposure and Response Prevention (ERP). Atypical antipsychotics are only considered as an add-on treatment in severe,

treatment-resistant cases. 2. (B) The lifetime prevalence of OCD in the general population is estimated to be around 2-3%, not 7-10%. 3. (D) Fear of contamination is one of the most common obsessions in OCD, often leading to compulsions like excessive hand washing, cleaning, or avoidance of "contaminated" objects. **********